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HISTORICAL SKETCH

OF THE

EDINBURGH

ANATOMICAL SCHOOL.

BY

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PREFATORY NOTE.

In preparing this Sketch for the press, my intention was merely to have given the Lecture as delivered before the Royal College of Surgeons, with notes and some additions to the text. But as I proceeded, I found that, in order to do justice to the subject, it was necessary to extend the text to several times its original dimensions, and, in order to render the statements authentic, to give numerous references and somewhat lengthy foot-notes. The whole of the part relating to the separation of Physiology and Surgery from the courses of Anatomy has been added.

J. S.

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HISTORICAL SKETCH

OF THE

EDINBURGH ANATOMICAL SCHOOL.

THE following historical sketch was delivered as a lecture before the Royal College of Surgeons of Edinburgh in April last, and now appears with notes and some additions to the text. It is to be regretted that the lives of the anatomists of the school have in some instances not been written at all, and in others unsatisfactorily. It has, therefore, not been easy to fill up some of the gaps, so as to frame a connected history of the school; and the facts, which, as will appear, are scattered, have required considerable sifting. The materials which I have collected have, however, at length become voluminous, and my remaining difficulty has been to give, in so short a space, anything like a satisfactory rendering of so long a period, and of so many eminent men.

THE SURGEONS IN 1505.

Provision was made for dissection in Edinburgh so early as 1505. The evidence of this is contained in the first charter to the Surgeons, granted by the Town Council, on 1st July 1505, and ratified by James IV. in the following year. The applicant for admission to the Incorporation was to be examined in anatomy, and the Surgeons were to have a body for dissection once a-year.[1]

[1] "And als That everie man that is to be maid frieman and maister amangis ws be examit and previt in thir poyntis following THATT IS TO SAY That he knaw anatomea nature and complexioun of every member In manis bodie And in lykewayes he knaw all the vaynis of the samyn thatt he may mak flew-bothomea in dew tyme And als thatt he knaw in quhilk member the signe

Considering the state of science, and of opinion regarding the propriety of the dissection of the human body, at this time, it is a remarkable circumstance that the importance and the practice of dissection, as the groundwork of the healing art, had been thus early and wisely recognised by the municipal authorities of Edinburgh.[1]

For nearly two centuries after the date of this charter we have no information as to anatomical study. We can only infer that the surgeons availed themselves of the privileges secured to them by the terms of the charter. Medical education was by apprenticeship, with these occasional dissections by the Surgeons for the instruction of themselves and their apprentices.

Development of the School, 1694 to 1720.

The year 1694 commences a new period, extending over a quarter of a century, during which, various efforts were made to establish

hes domination for the tyme for every man aucht to knaw the nature and substance of every thing thatt he wirkis or ellis he is negligent And that we may have anis in the yeir ane condampnit man efter he be deid to mak anatomea of quhairthrow we may haif experience Ilk ane to instruct others And we sall do suffrage for the soule."

The condition that the condemned man was to be dissected only "efter he be deid" is not so unmeaning as may at first appear. Herophilus and Erasistratus, under the first Ptolemy, probably the first who were authorized to dissect human bodies, were said to have been in the habit of opening also the bodies of the living in search of the more secret springs of life. This was still received by the vulgar, as well as the tradition of living bodies having been opened under the belief that they were dead. Half a century after the date of this charter, Vesalius was believed to have opened the body of a young nobleman whom he had supposed to be dead, discovering his mistake when it was too late.

[1] This was more than a century before Harvey discovered the circulation of the blood. Vesalius, the father of modern anatomy, was not then born. "The Emperor Charles V. was little more than five years old; that same emperor, who, many years after, called a consultation of divines at Salamanca to determine if it were consistent with conscience to dissect a human body for the purposes of science" (Gairdner, p. 4; Hutchinson's Biographia Medica, vol. ii. p. 472). Sylvius, the Parisian professor of anatomy was, in 1551, and at the age of seventy, still worshipping and defending Galen, and himself teaching anatomy "from small fragments of dogs" (Morley's Life of Jerome Cardan, vol. ii. p. 100). The following refers to a period a century after the date of the Edinburgh charter:—"We may form a judgment about the state of anatomy, even in Italy, in the beginning of the seventeenth century, from the information of Cortesius.

a school of anatomy in Edinburgh.[1] The impetus at this time, while favoured by the more peaceful condition of the country, was no doubt given mainly by the extension of the powers of this College (by royal grant in 1694, ratified by Parliament in 1695) from the city to the three Lothians and the counties of Peebles, Selkirk, Roxburgh, Berwick, and Fife. The tendency of this change would be greatly to increase the number of young men seeking to enter the profession through the college.[2] To ALEXANDER MONTEITH, an active member of the Incorporation, belongs the merit of making the first effort to open a school of anatomy. With this view he applied to the Town Council for a grant of dead bodies. This he appears to have done at the instance of Dr Archibald Pitcairn. This active and master spirit, who had held since 1685, the nominal office of Professor of Practice of Physic in the University,—had shortly before (in 1693) returned from Leyden, where he had gone to be Professor of Practice of Physic in

He had been professor of anatomy at Bologna, and was then professor of medicine at Messana; where, though he had a great desire to improve himself in the art, and to finish a treatise which he had begun on practical anatomy, in twenty-four years he could, *twice only*, procure an opportunity of dissecting a human body, and then it was with difficulties and in a hurry; whereas, he had expected to have done so, he says, *once every year, according to the custom in the famous academies of Italy.*" (William Hunter's Introductory Lectures, 1784, p. 41).

[1] The history of this period is based on the Records of the Town Council, extensively published by Bower in his elaborate history of the University ("The History of the University of Edinburgh." By Alexander Bower, 1817); and on the Records of this College, and also of the Town Council, extracted and published by Dr Gairdner ("Historical Sketch of the Royal College of Surgeons of Edinburgh," 1860; and "Sketch of the Early History of the Medical Profession in Edinburgh," 1864; by John Gairdner, M.D.), who has supplied the deficiencies and corrected the inaccuracies of Bower's account of the origin of the school, especially in relation to the part taken by the Surgeons in its formation. Dr Gairdner has kindly placed his MS. extracts from the original documents at my disposal. My frequent references are to his 1860 address, unless otherwise mentioned. Dr Gairdner, as will appear, has also, with the greatest kindness, done much to lessen the disadvantage at which distance has recently placed me in regard to consulting the Records of this College, and of the Town Council, for other parts of my lecture.

[2] The few physicians in Edinburgh at this time (the first charter of whose College is dated 1681) obtained their degrees in medicine, so far as known, from foreign universities (Gairdner, 1864, p. 16), and young men in search of medical education were in the habit of resorting, sometimes at no small risk as well as expense, especially to the then celebrated University of Leyden.

1692. He had brought with him the desire to see a school established in Edinburgh. He wrote, in October 1694, to a friend in London, that he was moving to obtain bodies from the Town Council, and expected, if this was granted, to surpass Leyden.[1] Although Pitcairn's political connexion may have been sufficient reason for his keeping in the background and putting forward Monteith to make the application to the Town Council, it does not appear that Pitcairn had the intention of himself engaging in teaching anatomy, or that he wished otherwise than that Monteith should be the person to carry out his plan.

Monteith's petition is dated 24th October 1694, and was at once granted. The Council appears not to have then understood the wisdom of allowing a motion to lie over till next meeting. Just a week afterwards (2d November 1694) the other Surgeons gave in, on the part of their Incorporation, a similar petition to the Council. The members of the Incorporation having hitherto enjoyed equal privileges in regard to the supply of bodies for dissection, were alarmed at the special grant to one of their number. Monteith appears to some extent to have stolen a march on his brethren, though the date of Pitcairn's letter, above quoted (14th October), shows that the intention was known to them. At all events, Monteith was not acting in concert with his brethren. The petition by the other Surgeons was not against Monteith's grant,[2] nor that they might share it with him, but that they might have other subjects than those already granted to Monteith, and their application was for the whole members of the Incorporation, of

[1] "We are told 'That on the 14th of October 1694, Dr Pitcairn informed Dr Robert Grey of London of his being very busy in seeking a liberty from the Town Council of Edinburgh to open the bodies of those poor persons who die in *Paul's Work*, and have none to bury them.' 'We offer,' says Pitcairn, 'to wait on these poor for nothing, and bury them after dissection at our own charges, which now the town does; yet there is great opposition by the chief surgeons, who neither eat hay, nor suffer the oxen to eat it. I do propose, if this be granted, to make better improvements in anatomy than have been made in Leyden these thirty years.'" (Chalmers' Life of Ruddiman, p. 30, quoted by Bower, vol. ii. p. 148).

[2] "The ground of their appearance against Mr Monteith's gift was only upon the supposition that he had enhanced and monopolized the whole subjects of anatomical dissections. But finding that, besides these subjects that the Council had been pleased to give, there were yet other subjects that might fall in the Council's power to give the petitioners," &c. Both Petitions, and Minutes of Council, are quoted at length by Bower, vol. ii. p. 150.

whom Monteith was one. Monteith obtained a grant, exactly as he had asked, of "those bodies that dye in the correction-house," and of "the bodies of fundlings that dye upon the breast." The Surgeons obtained "the bodies of fundlings who dye betwixt the tyme that they are weaned and thir being put to schools or trades; also the dead bodies of such as are stiflet in the birth, which are exposed, and have none to owne them; as also the dead bodies of such as are *felo de se*, and have none to owne them; likewayes the bodies of such as are put to death by sentence of the magistrat, and have none to owne them,—which incluides what former pretensions of that kind the petitioners have." [1]

Monteith also obtained a room for dissections.[2] Other conditions attached to the grant are curious. The dissection was to be during the winter season only, from one equinox to the other; "all the gross intestines" were to be buried within forty-eight hours, and the rest of the body within ten days, at the petitioners' expense. The regular apprentices of the Surgeons were to be admitted at half fee, and the right of being present was reserved to any of the magistrates who thought fit. Any friend who desired might require the body to be buried, if he refunded "to the kirk treasurer what expenses he hath been at upon the said deceased persons." The conditions attached to the grant to the Surgeons are to the same effect, without mention of the gross intestines, and with what proved ultimately the important addition, "that the petitioners shall, befor the terme of Michallmes 1697 years, build, repaire, and have in readiness, ane anatomicall theatre, where they shall once a year (a subject offering) have ane public anatomicall

[1] Records of Town Council, as given by Dr Gairdner p. 16. Bower (ii. 157) says that the bodies of all unclaimed criminals already belonged to the Incorporation of Surgeons as a perquisite. There is no proof of this, unless we accept the words "which includes what former pretensions of that kind the petitioners have" as referring, which it not improbably does, only to the last-mentioned class of bodies. The charter of 1505 secures only one such subject annually. The words of the Surgeons' petition do not make this clear. They asked "the dead bodies of foundlings after they are off the breast, and the bodies of such as may be found dead upon the streets, and such as die a violent death, all which shall have nobody to own them." (Bower, ii. 154.) The supposition, however, would account for Monteith not having asked for these bodies. It will be observed in the grant, that it applied only to those criminals who "have none to owne them."

[2] "Any vacant waste-room in the correction-house, or any other thereabouts belonging to the town."

dissection, as much as can be showen upon one body, and if the failzie thir presents to be void and null."

Monteith's scheme did not succeed. His grant had been for thirteen years, but after three years (16th April 1697) he took a lease of a chemical laboratory within Surgeons' Hall for the purpose of teaching chemistry.[1]

Although it has been taken for granted that Monteith taught anatomy during the intervening three years, there is no evidence that he did. The only, or almost only, pupils who could be obtained at that time in Edinburgh, were the apprentices of the Surgeons, and as Monteith had, unlike Monro afterwards, acted without concert with his brethren, who were now conducting a rival scheme, he could scarcely have a class. Monteith, however, must have been on good terms with his brethren of the Incorporation, as they elected him their president in 1695 and 1696.[2]

If Monteith did not actually teach anatomy himself, he had at least the merit of being the first who endeavoured to do so in Edinburgh, and of originating, with Pitcairn, a movement which led ultimately to the formation of a school.[3] We need the less

[1] Gairdner 1864, p. 23. The Surgeons had resolved on 2d June 1696 to build a hall, assigning as a reason that the Town Council's gift would otherwise lapse (Surgeons' Records, Gairdner, p. 17). Monteith would see that this theatre would give permanence to the Surgeons' scheme. His change to chemistry enabled him to teach in the hall, and to avoid rivalry with his brethren. Dr Pitcairn wrote of him, in 1694, as "an excellent man, an eminent surgeon, and well acquainted with chemistry." He was still teaching chemistry in 1702 (Bower, ii. 149 and 159). On 1st June 1698, he petitioned the Town Council for some remuneration (Bower, ii. 158), and was allowed four hundred pounds Scots. This grant could not be part of an arrangement for the abandonment of his anatomical scheme, as the lease for the chemical laboratory was taken a year before. It does not appear what claim Monteith had on the Council, except the importance of helping on the new scheme of this enterprising surgeon.

[2] He was again elected chairman of the Surgeons in 1699. From this office, as well as those of Town Councillor and Convener of the Trades, he was "displaced for a year and a day by the Lords of the Secret Council, at the instance of the Magistrates" (Chronological List of Presidents R.C.S., p. 12), probably under suspicion as a partisan of the Stuarts. Monteith was highly connected, being the son of the representative of the second or Stuart line of Earls of Menteith (Gairdner, p. 20, and 1864, p. 23). He was the leading Edinburgh surgeon of his day. His name appears as entering the Incorporation 22d December 1691. He died in 1713.

[3] The terms of his petition to the Town Council show what he contemplated —"That whereas the improvement of anatomy is of so universal concern, that

regret that the rival scheme of the other Surgeons succeeded rather than Monteith's, as it led on at last to the appointment of Monro.

Completion of the Surgeons' Anatomical Theatre and Commencement of the Annual Public Anatomical Dissection.—On 17th December 1697, the Surgeons' Anatomical Theatre being reported to the Town Council as completed, the Council ratified its grant (of 1694), and the same day the Surgeons chose a "committee to appoint the methods of the public dissections and the operators."[1] Although since 1505 the Surgeons had been entitled to a body annually, we have only now the commencement of what was termed a "public anatomical dissection." This did not mean open to any one, for the Town Council, much against the wish of the Surgeons, restricted the use of the theatre to the regular apprentices and pupils of freemen;[2] but was evidently a provision to secure a formal course of anatomical instruction. It is remarkable that this injunction should have emanated from the Town Council, apparently unsought; but the Chairman of the Surgeons sat at the Council Board.

Those of their number to whom the Surgeons intrusted this duty were termed "operators." An interesting minute in the Surgeons' Records, of date 18th May 1704,[3] shows the method in which this course of anatomy was conducted. It records a vote of thanks to the operators who had conducted the course in the previous month. The names and subjects are thus enumerated:—The *first* day, James Hamilton—a discourse on anatomie in generall, with a dissection and demonstration of the common teguments and muscles of the abdomen. The *second* day, John Mirrie—the umbilicus, omentum, peritoneum, stomach, pancreas, intestines, vasa lactea,

the practice thereof is encouraged in all nations and cities where the health of the bodies of men are regarded . . . . he would not only lay himself out for the improving of anatomy, but also would serve as chirurgeon to the town's poor *gratis* . . . . Craving, therefore, the Council to consider the premises, and what advantage the same may be of, not only to the interest of the city, but to the whole kingdom." And the first words of the Council's grant show the sense in which they understood the proposal—"Which being considered by the Council, they think it both convenient and necessary to give a beginning to the practice of anatomy in this city."

[1] Records of the Surgeons,—Gairdner, p. 17; Council Register, Bower, ii. 157.

[2] This is mentioned by Gairdner, p. 17, but does not occur in Bower's copy of the Council Register, ii. p. 157.

[3] Gairdner, 1864, p. 24.

mesentery, receptaculum chyli, and ductus thoracicus. The *third* day, Mr Alexander Nisbet—the liver, vesica fellis, with their vessels, spleen, kidneys, glandulæ renales, ureters, and bladder. The *fourth* day, George Dundas—the organs of generation in a woman, with a discourse of hernia. The *fifth* day, Robert Swintoun—the containing and contained parts of the thorax, with the circulation of the blood and respiration. The *sixth* day, Henry Hamilton—the hair, teguments, dura and pia mater, cerebrum, cerebellum, medulla oblongata, and nerves within the head. The *seventh* day, Robert Eliot—the five externall senses, with a demonstration of their severall organs. The *eighth* day, John Jossy—the muscles of the neck and arm, with a discourse on muscular motion. The *ninth* day, Walter Potter—the muscles of the back, thigh, and legg. The epilogue or conclusion by Dr Archibald Pitcairn." Pitcairn, though physician, had, in 1701, entered also the Incorporation of Surgeons, and we may be sure that the epilogue would not be the least interesting part of this course of anatomy in ten lectures. It will be remembered that the terms of the grant required the body to be buried in ten days, and the labour of dissection, as well as of exposition, was lessened by dividing the duty among ten lecturers, who appear to have been appointed to the duty for the current year only.

Appointment of Special Teachers of Anatomy—Elliot, Drummond, M'Gill, Monro.—A new system was begun in 1705, by the Surgeons intrusting the entire duty to one of their members, and at the same time a new element is introduced by the Town Council conferring upon the same surgeon the appointment of professor of anatomy in the University, so that the appointment came to be a double one, the Town Council giving a small salary (£15), and the Surgeons supplying the theatre. During a period of fifteen years these appointments were held by Robert Elliot, Adam Drummond, and John M'Gill, till 1720, when Drummond and M'Gill resigned in favour of Monro, whose appointment begins a new era in the school.

The reasons for the first appointment deserve notice. Elliot offered to his brethren of the Incorporation to undertake the duty, and his offer was accepted.[1] His object in petitioning the Town

[1] Elliot's application and its acceptance by the Surgeons (Surgeons' Records, 1st February 1705), and the Town Council Minute (29th August 1705) are given

Council was to obtain pecuniary assistance, which the Council granted.[1]

in full by Gairdner, pp. 32, 33; the latter also by Bower, ii. 159, and by Dalzel, ii. 291. In the Town Council Minute anent his petition we read, that, having been "by ane act of the Incorporation of the Chirurgeon-apothecaries of this ity unanimously elected their public dissector of anatomie, the petitioner was of intention to make ane public profession and teaching thereof for instructing of youth to serve her Majesty's lieges both at home and abroad in her armies and fleets which he hoped, by the blessing of God, would be ane mean in saving much money to the nationе expended in teaching anatomie in forraigne places, beside the preventing of many dangers and inconveniences to which youth are exposed in their travells to other countries." Bower, aware of no other reasons than those assigned in this petition, writes about Marlborough being then at the height of his reputation, and the increasing demand for medical men for the army. The reasons assigned were good, but Elliot was more candid with his brethren of the Incorporation, as the following extract from the Surgeons' Records (Gairdner, p. 32) will show:—1st Feb. 1705.—"The Deacon etc being conveened and taking into their consideration certain proposals given in unto them be Robert Elliot one of their own number bearing that sundry of the Society were informed of a person now in this city that designed to apply to this society for their allowance and encouragement in the publick and privat teaching of anatomie, and for that end was to offer to them the giving of their apprentices and servants the benefit of public dissections and demonstrations yearly gratis, he having access to the bodies they have a right to, the use of their theatre and benefit of teaching their apprentices and servants in his private colledge—So after considering the designe of the forsaid gentleman the said Robert Elliot did humbly judge it would no less tend to the credit of this honourable boord to allow and appoint such of their own number as make the same offer especially seeing they have already begun it in their own persons, and for that end did offer his service this way, hoping the table would favourable construe of this his forward offer, and at the same time rather imputt it to a desire of preventing extraneous hands in meddling in their matters than any prospect that he can have in view this way—And if the calling shall be pleased to allow to the said Robert Elliot upon the foresaids conditions the benefitt of these bodies spoke of and their theatre for what is publick and the encouragement he may reasonable expect from their apprentices and servants in what he does in a private colledge he shall not fail (through Divine assistance) to give all possible care etc." It is to be regretted that we do not know even the name of this now mysterious stranger, to whom we owe Elliot's proposal, and the change of system which the adoption of it inaugurated.

[1] "In reguard the petitioner was by the Incorporation of chirurgeons unanimously chosen to that effect, therefore the committee were of opinion that the petitioner should have ane yearly allowance of what soume the Councill should think fitt towards the encouragement and defraying his charges thereanent with the express provisione and conditione that the petitioner take exact notice and inspectione of the rarities in the colledge, and that an exact inventar be made of the same and given in to the Councill."

Elliot is commonly mentioned as the first professor of anatomy in the University. The facts are:—No title of any kind is used in the Surgeons' minute, Elliot's appointment by them being simply their acceptance of his offer to undertake the duty. The Town Council minute, as above quoted, refers to the Surgeons having unanimously elected Elliot their "public dissector of anatomie," but the minute of Town Council confers no title, or other University appointment than that (in the terms above-quoted) which we would now-a-days call conservator to the museum of the University. It was salary not title that was in question. But in subsequent minutes the title of "Professor of Anatomy" is used by the Town Council in referring to Elliot, and in appointing his successors, although the Surgeons do not employ the designation in their Records.[1]

Elliot was elected by the Surgeons 1st February 1705, and by the Town Council on his petition to them, on 29th August 1705. He had entered the Incorporation in 1696, and died in 1715. He was professor of anatomy for ten years;—three as sole professor, during the remaining seven joint-professor with Drummond.

Drummond was elected joint-professor of anatomy with Elliot, by the Town Council, on 28th July 1708, on a representation made in his favour by the president of the Surgeons; and on 5th August, following "was admitted by the Surgeons, on a motion by Elliot, to be conjoined with him in the use of the theatre, both for public and private courses." He had entered the Incorporation in

[1] 28 July 1708.—"The Councill with the extraordinary Deacons upon a representation made to them by John Mirrie present Deacon of the Chirurgeons made constituted and ordained Mr Adam Drummond Chirurgeon-apothecary to be conjunct Professor of Anatomy with Robert Elliot Chirurgeon-apothecary and present Professor thereof, and allowed him the equal half of the emoluments and casualties due to the said Robert Elliot conform to the Councill's Act in his favours of the date 29th day of August 1705 years whereanent thir presents shall be warrand." 24th October 1716.—"The same day the Counsel with the extraordinary Deacons upon severall greate and weighty considerations have constituted and ordained and hereby constitutes and ordains Mr John M'Gill, present Deacon of the Chirurgeons to be Professor of Anatomy in place of Robert Elliot deceased in conjunction with Mr Adam Drummond, Chirurgeon-apothecary, present Professor thereof."—(Town Council Records, MS. from Dr Gairdner.) Again in the Council Records, 22d January 1720, containing Monro's appointment, Drummond and M'Gill are spoken of as "conjunct Professors of Anatomy in this city and colledge;" and Monro is appointed "Professor of Anatomy in this city and colledge." Bower, ii. 167.

1707; was joint-professor of anatomy for twelve years, till 1720, when he demitted in favour of Monro; was president of the Surgeons in 1748 and 1749; and died in 1759.

M'Gill was elected joint-professor of anatomy along with Drummond, in room of Elliot deceased, on 24th October 1716; and on the 28th March following was appointed by the Surgeons also. He had entered the Incorporation in 1710, was president in 1716 and 1717, and again in 1732 and 1733.[1]

"On the 21st January 1720, Drummond and M'Gill stated to a meeting of the Surgeons their inability to attend to their professorship. 'They and the haill calling being persuaded of the sufficiency of Alexander Monro, one of their number, did therefore unanimously recommend him to the Provost and town of Edinburgh to be Professor of Anatomy within the said city.' On the 29th January 1720, the demissions of M'Gill and of Drummond, subscribed with their own hands on the 26th and 28th were reported to the Town Council by Mr John Lauder, then Deacon, who recommended Alexander Monro, and tabled the recommendation of him by the Surgeons."[2] The Council accepted the demissions, and elected Monro "Professor of Anatomy in this city and college," continuing the yearly salary of £15.

In making and agreeing to these appointments of Elliot, Drummond, M'Gill, and Monro, no question of precedence or of relative authority appears to have arisen between the Incorporation of

[1] In the Edinburgh Medical Essays (vol. ii. p. 224) is a graphic account by M'Gill of a case of large false aneurism at the bend of the arm in which, after pressure had failed, he performed the operation in the Infirmary, in 1733, with evident dexterity and familiarity with the anatomy of the parts.

[2] Gairdner, pp. 17, 18, from whose references to the Surgeons' and Town Council Records the above facts and dates regarding Elliot, Drummond, M'Gill, and Monro, are given. Bower's account is either inaccurate or deficient. The following occurs in the "Address delivered at the Opening of the New Hall of the Royal College of Physicians," 1846, by W. Beilby, M.D.:— "In 1720, Alexander Monro, *primus*, proposing to teach anatomy, applied to the College of Physicians for what was at that time an indispensable prerequisite, the formal sanction of its 'Testimonium;' which being granted he received a commission from the Town Council to teach" (p. 23). The Council minute appointing Monro (Bower, ii. 166) contains no mention of the College of Physicians. The mistake in Dr Beilby's address is partly explained by a minute of Town Council (August 24, 1720; Bower, ii. 177) seven months after Monro's appointment. Both colleges had been stirred up by Monro's friends, to attract notice and give success to his first course of lectures, and had written to the Town Council setting forth the importance of encouraging Monro.

Surgeons and the Town Council. In the case of Elliot the Surgeons appointed first, the Council following; in the other three cases, the Council made the appointment—in Drummond's case, on a representation by the chairman of the Surgeons, in Monro's case, on the more formal recommendation of the Surgeons—the Surgeons then granting the use of their theatre. The Council, being the municipal authority, as well as patrons of the University, gave the title of Professor of Anatomy in the city as well as in the University. The Surgeons had the theatre, the subjects, the command of the pupils, and required some one to teach anatomy to their apprentices; the Council had the power of withholding the subjects, and of granting the salary. There was a common interest, no question arose, and there was probably some looseness, or at least no fixed principle, of procedure. The harmonious action of the two Incorporations was no doubt greatly promoted by the circumstance that the President of the Surgeons (or Deacon, as he was then called) had a seat at the Council Board, a connexion which terminated with the Burgh Reform in 1833. Although it was attended with the drawback of the veto by the Council on the Surgeons' choice of their president, a power which the Council more than once exercised, there can be no doubt that this connexion was, in these early times, of signal benefit in promoting the anatomical school.

It does not appear that there was much anatomical teaching by Elliot, Drummond, or M'Gill. In a manuscript autobiography of Monro, which Bower had the opportunity of examining,[1] Monro mentions, among his early opportunities in Edinburgh, having attended "the dissection of a human body which was shewed once in two or three years by Mr Robert Elliot, and afterwards by Messrs Adam Drummond and John Macgill." Monro's personal knowledge of this, as a student, would be for a few years preceding 1717, and we are not informed at what age he wrote the above. On the other hand, there is a minute in the Surgeons' Records of a meeting held by them on 20th May 1711, to condemn and put a stop to the violation of the graves in the Greyfriars' churchyard, which states that the supply of subjects had been hitherto "plentiful," although the fact of the occasion of the minute does not well bear out the statement.[2] The terms of Elliot's application, and of Drummond's

[1] ii. 168 and 170.

[2] The minute is quoted in full, from the Town Council Records, by Bower

admission to the use of the theatre, show that there was the distinction of "private" and "public" anatomical teaching, with, as indicated in Elliot's case, separate remuneration for the "private colledge." In Elliot's time, too (1707), there is an indication of activity in a dispute which the Surgeons had with the Magistrates of Dundee about the carcase of "ane elephant."[1]

Commencement of the Medical School.

The chief object in seeking the appointment from the Town Council in the cases of Elliot, Drummond, and M'Gill, appears to have been to obtain the salary which the Council gave with the title of Professor of Anatomy in the University; but, in Monro's case, the University appointment was the chief object, as part of the plan now on foot for the formation of a regular school. The best way to accomplish this was by obtaining the theatre and subjects belonging to the Surgeons, their apprentices for pupils, and their support with the Town Council.

After the appointment of Monro in 1720, the scheme rapidly developed. Four members of the College of Physicians, Drs Sinclair, Rutherford, Plummer, and Innes, who had been preparing for the duty, by study at Leyden under Boerhaave, now joined Monro at the Surgeons' theatre, and taught the theory and practice of medicine and chemistry. Left behind by the removal of Monro, five years afterwards, to the University buildings, they petitioned the Town Council to be made professors in the University. This the Council did on 9th February 1726. Thus the Medical School of the

(ii. 163), and is, so far as I am aware, the first record of this practice in Edinburgh. The minute states that "of late there has been a violation of the sepulchres in the Greyfriars' churchyard, by some, who most unchristianly have been stealing, or at least attempting to carry away, the bodies of the dead out of their graves. . . . . But that which affects them most is, a scandalous report, most maliciously spread about the town, that some of their number are accessary, which they cannot allow themselves to think, considering that the Magistrates of Edinburgh have been always ready and willing to allow them what dead bodies fell under their gift, and thereby plentifully supplied their theatre for many years past." They entreat the magistrates to search out and punish the authors, actors, and abettors; enact that any of their number who shall be found accessary to the violation of the graves, shall be expelled, and that any apprentice, or servant, found guilty shall forfeit his indenture and be expelled his master's service with disgrace.

[1] Surgeons' Records.—Gairdner, p. 22.

University was formed by the transference of the school which Monro had gathered round him in the theatre in old Surgeons' Hall.[1]

Looking back on this history we are struck, first, with the early enactment of dissection, and then, notwithstanding, by the long period during which no progress was made, although during these two centuries anatomical teaching and science had made great progress on the Continent—in Italy, Belgium, Holland, and France. During this time Vesalius, Fallopius, Vidius, Sylvius, Columbus, Eustachius, Varolius, Fabricius, Malpighi, Ruysch, and other anatomists of fame, had flourished; Harvey had discovered the circulation of the blood, in the neighbouring kingdom, a century before, and had been dead for sixty years; and yet Edinburgh, which was erelong to surpass all other schools in reputation, was during all this time without either school or anatomist of fame. For the explanation of this long delay, we need not go farther than the condition of Scotland, miserably poor, and distracted by frequent conspiracy and war. The efforts which began with Monteith in 1694 are accounted for by the circumstance that, in that year, the powers of this college were extended from the city to a considerable part of Scotland, but even then the political condition of Scotland offered little encouragement to the cultivation of science. The union with England took place only in Elliot's time,

[1] Of St Clair, Rutherford, Plummer, and Innes, Bower (ii. 210) says, "They appear to have taught at their own lodgings, or in some public hall;" Gairdner (p. 21), that they taught in the theatre at Surgeons' Hall. In an "Essay for Reforming the Modern Way of Practising Medicine in Edinburgh," by Dr Græme, printed in 1727, the following reference is made, Thomson states, to these lectures:—"There has of late been taught here, and with some considerable success, at the *Surgeons' Hall*, the whole art of medicine in a systematical way" (Thomson's Life of Cullen, 1832, i. 8). The following occurs in the Surgeons' Records, 18th October 1726:—"Allowed William Græme the use of the theatre for his prelections" (MS. from Dr Gairdner). In regard to the teaching of St Clair, Rutherford, Plummer, and Innes, and their appointment as professors in the University, on 9th February 1726, see Bower, ii. 204, 205, and 212; Dalzel (History of the University of Edinburgh, 1862) ii. 416; Fothergill in Thomson's Life of Cullen, Appendix, Note A; and Annals of the Parish of Colinton, by Thomas Murray, LL.D., Edin. 1863. In regard to Alston's lectures, compare Thomson's Life of Cullen, Appendix, Note A.; Bower, ii. 180 and 321; Life of Alex. Monro, pp. 11 and 12; and Dalzell, ii. 407, 413. In regard to the appointment of the first Professor of Midwifery, see Council Records, 9th February 1726 (Bower, ii. 254), which contains also the views of the Council in regard to licensing and registering midwives.

and it was thirteen years after this event that the school was opened by Monro.

Even then, the formation of the school was due to the forethought and guidance of one whose name deserves mention and honour. This was JOHN MONRO, the father of Alexander Monro. An army surgeon of good Scotch family and education, he had settled in Edinburgh in 1700, and joined the Surgeons. An able, accomplished, amiable man, he rose high as a practitioner, and was President of the Surgeons in 1712–13. As a surgeon in King William's Army, he had seen the necessity for improved medical education, and, as a travelled man, he knew what medical education was on the Continent. His affection for his only son, and his desire to see a Medical School established in Edinburgh, became united in the idea of his son being the instrument. It was henceforward the idea of his life. He educated his son for it, and, when the time came, communicated his plan to the Physicians and Surgeons, by whom it was well received. It was part of his plan to persuade others to join with his son; and when the college part of the scheme was fairly launched, he saw the necessity for an hospital, and set his son to write and work for it. To this far-seeing and good man must be assigned the merit of the idea, and of being the organizer of the scheme, the success or failure of which was to depend on his son.[1]

ALEXANDER MONRO.

Young Monro was fortunate in having a father whose high professional and social position secured for his son every advantage of education which Edinburgh and her University could give, and whose chief care and pleasure was the education of his only child.

[1] References to John Monro occur in the Life of Alex. Monro, especially pp. 10, 11, 12, and 19; and Gairdner, p. 13. "About the year 1720, his father communicated to the Physicians and Surgeons of Edinburgh a plan which he had long formed in his own mind, of having the different branches of Physic and Surgery regularly taught at Edinburgh, which was highly approved of by them" (Life, p. 12). On page 19, there is a pleasing picture of the father's old age, spent at a country seat in Berwickshire, happy in the renown of his affectionate son and in the success of "his favourite plan," "the founding of a Seminary of Medical Education in his native country." On putting together the various statements regarding his intentions and exertions there can be no doubt that John Monro is fully entitled to the merit which I have assigned to him.

Having, under the circumstances naturally, shown an early inclination to the study of medicine,[1] he was bound apprentice to his father. By his father's influence, and his own early enthusiasm, he was admitted to the opportunities which the Edinburgh surgeons could give him of assisting at post-mortem examinations, which, with the little anatomical instruction given by Drummond and M'Gill, some instruction in pharmaceutical plants by Mr George Preston, and in chemistry by Dr Crawford, and what experience he obtained as his father's apprentice, constituted all the medical education which Edinburgh could then give.

John Monro's plan being to educate his son to be a teacher of anatomy, Alexander was now, at the age of 20, sent to London and thence to Paris and Leyden, between which he spent two years in the study of anatomy and other branches of medicine. It was in London, under Cheselden, that Monro learned anatomy, and how to teach it. He occupied himself chiefly in "assiduously dissecting human bodies, of which he was furnished with more than, with the utmost application, he could make use of."[2] Cheselden had already been teaching anatomy and surgery for seven years, was an enthusiastic teacher and eloquent lecturer, and encouraged his students to observe and think for themselves.[3] Amid such opportunities and influences, it may easily be imagined how a young man in Monro's position would expand. Nine years Monro's senior, Cheselden and he were kindred spirits, and formed a lasting friendship. Before leaving London for Paris he sent home to his father a number of anatomical specimens which he had prepared,

[1] Life of Alexander Monro, by his eldest son Dr Donald Monro, of London, 1781,—prefixed to the Quarto Edition of Monro's collected works, published by his son Alex. Monro *secundus*. All the subsequent notices of Monro are from this Life, except Bower's, which gives some additional information obtained from a manuscript autobiography of Monro *primus*, lent to Bower by Alex. Monro *tertius*. (Bower, ii. 168.)

[2] Autobiog., Bower, ii. 172. Here his career was nearly cut short by the effects of handling the suppurated lungs of a phthisical subject, when his hands had been accidentally scratched. It was thought that, at least, he would lose one arm.

[3] Monro appears to have been the most active member of a society of students which Cheselden encouraged his pupils to form, and which met in his theatre. His subsequent work on the Bones, and his account of the Nerves and Thoracic Duct, had their origin in the mutual improvement lectures at this society; and the first sketches of the two latter were added to Cheselden's anatomy.

and received the encouraging reply that, if he continued as he had begun, Mr Drummond was ready to resign his professorship of anatomy in his favour, on his return to Edinburgh. In Paris, besides attending medical classes at the hospitals, he had a course of anatomy from M. Bouquet, and performed the operations of surgery. At Leyden he became a favourite and admiring pupil of the great Boerhaave, then 51 years of age.[1] Raw, the professor of anatomy and celebrated lithotomist, was too ill to teach at the time, but we find Monro explaining to the Leyden students the differences between the structure of the human body and that of animals which he had just dissected.[2]

Returning to Edinburgh in the autumn of 1719, he was examined and admitted by the Surgeons (20th November 1719), and two months afterwards (29th January 1720), on their recommendation to the Town Council, elected professor of anatomy in the University. He was then 22 years of age, having been born on September 8, 1697. He had eight months to prepare for his first course, and meanwhile great exertions were made by the father in and beyond Edinburgh to attract notice to his son's undertaking. He commenced with an attendance of 57 students.

He continued to teach during the first five years in the theatre in Surgeons' Hall,[3] when he removed his class to the University buildings. The removal to the University arose out of the circumstance of a mob having (in April 1725), in consequence of the supposed violation of graves, threatened the demolition of Monro's establishment in Surgeons' Square. The city was in an uproar,

[1] This mutual regard continued, and Monro sent patients from Scotland to consult Boerhaave. This connexion, as well as the fact of St Clair, Rutherford, Plummer, Innes, and Alston, having also studied under Boerhaave, may account for the extraordinary hold which the doctrines of Boerhaave so long maintained in the Edinburgh school. (See Thomson's Life of Cullen, i. 118.)

[2] This study had formerly also the interest of the discussion whether Galen had described from man or from quadrupeds, which had excited so much feeling since the revival of anatomy by Vesalius. Sylvius, for instance, defended the statement of Galen that the human sternum is composed of seven bones, saying that "in ancient times the robust chests of heroes might very well have had more bones than our degenerate day can boast."

[3] This was the building known, since 1832, as old Surgeons' Hall, in the centre of the south side of Surgeons' Square, now belonging to the Royal Infirmary, and occupied on occasion as a Fever Hospital. It was built in 1697. Dr Gairdner's Historical Sketch contains a lithograph showing the Hall as it originally was. It was probably built on the site, or as an extension of

Surgeons' Hall was beset, and the tumult was quelled only by the energetic action of the magistrates (Council Records, Bower, ii. 183). I have already alluded to this practice having commenced, or been suspected before Monro's time (in 1711), but the Surgeons' Records bear evidence of increased alarm on this score after Monro opened the anatomical school. 24th January 1721—"It was this day ordered that a clause should be put into all indentures of apprentices against violation of the churchyards." 17th January 1722—"On a complaint by the Lord Provost of violation of the Greyfriars Churchyard, the apprentices were obliged to subscribe an obligation that they would altogether avoid raising the dead." 2d March 1725—"Ordered that upon the professor of anatomy lodging ane humane body in their Hall or Theatre, he forthwith, by a letter, acquaint the Deacon, Theasarer, or, in case of their absence, the eldest Deacon in town—and that it was regularly procured, and obtain their allowance for the same. But in case the Professor do not in the terms of this order signify, &c.—and obtain their allowance as said is, the Professor is hereby required immediately, in obedience to this order, to remove and carry off the subject, and shall be answerable to the calling for any consequences that may arise from his bringing in or carrying off the said subject."[1] The Surgeons were not likely to regard with patience the prospect of their Hall being burned down, as the return for giving the use of their theatre; the Professor was as little likely to relish the probability of his museum being destroyed, or of having to submit to the new restrictions in regard to subjects which the Surgeons now laid upon him. Monro accordingly (20th October 1725) applied for, and obtained a theatre in the University.[2] He asked the Town

the first Hall ("Conveening House") which the Surgeons resolved to build in 1669. The 1697 Hall contained the theatre which the Town Council had required the Surgeons to provide in the grant of 1694. This theatre was, in 1697, the scene of the first public anatomical demonstrations in Edinburgh, and continued to be so used till 1725, when Monro removed his class to the University buildings. The present Hall, in Nicolson Street, was inaugurated in 1832. (Gairdner, p. 22, 24, 35.)

[1] MS. extracts from Surgeons' Records, from Dr Gairdner.

[2] On 14th March 1722, Monro had, on petition, been made professor of anatomy, *ad vitam aut culpam*, his first appointment in 1720 having been, like that of his predecessors, "during the Council's pleasure." This was done notwithstanding the Council's general Act of August 1719, that professorships should be held during their pleasure. They saw the importance of it in Monro's case, and it became a precedent which has been adhered to ever since. (Council Records, Bower, ii. 182.)

Council "as patrons of the Universitie to allow him, as Professor of Anatomy therein, a theatre for public dissections." The Council appointed a Committee "to appropriate ane fitt place in the said University, to be adapted for the said theatre."—(Council Records, Gairdner, p. 18.) Ten years afterwards, another Council Minute occurs:—"21st January 1736.—Mr Monro, Professor of Anatomy, upon a petition from him, allowed a room in the College, during the Council's pleasure, and that for teaching his private sessions only" (Dalzel, ii. 406). The first was a grant for a lecture room; this must mean for a dissecting room.

The attendance on Monro's lectures increased rapidly. With the very successful beginning of 57, the average attendance during the first ten years was 67; during the second decennium, 109; during the third, 147.[1]

Monro's course extended from October to May, and embraced surgery as well as anatomy. His lectures were illustrated by dissections of the human body, and also, for comparison, of the bodies of quadrupeds, birds, and fishes. After giving the anatomy of each part, he treated of its diseases, especially of those parts requiring operations. He showed the operations on the dead body, and the various bandages and apparatus; and concluded the course with some lectures on physiology. He continued to give such a course uninterruptedly for thirty-eight years. He did not read his lectures. Even in giving the history of anatomy, with which he

[1] The number in each year from 1720 to 1751, is given by Bower (ii. 179) as communicated to him by Monro *tertius*.

1720 ...	1730 ...	1740 ...	1750 ...
57	83	130	158
68	82	136	144
62	107	131	
68	104	164	
58	111	150	
51	95	76	
65	131	182	
81	123	165	
70	119	160	
90	137	182	
670	1092	1476	

The sudden fall in 1745 is accounted for by the rebellion which broke out in autumn, Edinburgh being in the hands of Charles Edward and the Highlanders when the session began. The battle of Prestonpans was on 21st September, and Monro was active on the field afterwards, assisting the wounded and in getting them brought into Edinburgh.

began his course, he spoke without the assistance of notes, except for the names and dates.[1]

Six years after he had begun to teach, Monro published his great work on the Human Bones, which went through eight editions in his life time, and was translated into most European languages. The early publication and great reputation of this work must have tended materially to give fame to the Edinburgh school. All Monro's writings have been reprinted in one large quarto volume. They are full of fact and thought, expressed in few and plain words. It is, however, impossible for me, in these limits, to give anything like a critical notice of the writings of the various anatomists of whom I have to speak, or to do more than merely mention them.

Monro attended the hospital and "frequently, while he continued Professor of Anatomy, gave lectures on the chirurgical cases" (Life, p. 14). It does not appear whether he took his turn, with his brethren of the Incorporation, as one of the acting surgeons of the Infirmary, or whether his clinical lectures were delivered on the cases under treatment by the acting surgeons. He was not an operating surgeon, at least in the greater operations. He appears to have been in extensive practice, and his advice to have been sought as that of a scientific practitioner in all kinds of cases. Of fifty-five papers, or essays, in his collected writings, there are, in anatomy and physiology, seventeen; in surgery, nineteen; in medicine, fifteen; in midwifery, four.

Monro has the chief merit in the establishment of two institutions. Various public bodies took part in establishing the Royal Infirmary, but Monro and Lord Provost Drummond were the active spirits of the movement. When the present building was at last commenced in 1738, they were the "building committee;" great public enthusiasm prevailed in collecting the money, and Monro and Drummond regularly paid out the workmen's wages with their

[1] There is a tradition that one of the Monros, on coming in to his first lecture, turned and fled, and was brought back by his father. The only foundation for this, is the occasion, soon after Monro's appointment, on which John Monro had invited the physicians, surgeons, and magistrates, to hear the first of a few lectures which he had prevailed on his son to give and illustrate by his specimens. Coming into the Hall, the sight of this unexpected company threw him into such confusion that he forgot the words of the discourse which he had committed to memory, and he had left the manuscript at home. Obliged to speak extemporaneously and trusting to his knowledge of the subject, he found that he could speak easily and well; and ever afterwards acted on this discovery of his own powers.

own hands. Hence the professor of anatomy is *ex-officio* a manager of the Infirmary. The other was a Medical Society which, after publishing several volumes, and passing through an intermediate stage, as the "Philosophical Society," was finally, in 1782, incorporated as the Royal Society of Edinburgh.[1]

After resigning the duties of the anatomical chair to his son in 1758, at the age of 60, Monro devoted himself during the remaining nine years of his life to practice, and to teaching as one of the professors of clinical medicine.[2] During the last five years of his life he suffered more or less from a painful disease which at last cut him off on 10th July 1767, near the age of seventy.[3]

Monro is invariably referred to as having been in every relation of life, a most admirable and lovable man; sincere, modest, without jealousy, benevolent, kind to his students; an able and active, and

[1] The Society was begun before 1732. Monro was secretary, and editor of the six volumes of "Medical Essays and Observations" which it published. It became the "Philosophical Society," some time before the rebellion of 1745, David Hume and Monro being joint secretaries. In 1758 Monro *secundus* was made joint medical secretary with his father. The Society published three volumes of "Essays Physical and Literary." Most of Monro's papers, and his son's earliest papers, appeared in the volumes published by these societies. To these succeeded the "Medical Commentaries," 20 vols., 1773–95; the "Annals of Medicine," 8 vols., 1796–1804; after which commenced the "Edin. Med. and Surg. Journal."

[2] The University conferred on him the degree of M.D. in 1756, and he then became a member of the College of Physicians. Dr Duncan, senior, who wrote a notice of Monro in 1780, mentions that he attended his last clinical course, and how much pains he took as a physician and teacher at the Infirmary.

[3] As the symptoms plainly indicated, it was found to be disease of the rectum at last opening into the bladder. For more than a year before his death he suffered great pain, which he bore without repining, and he viewed his approaching death with the calmness worthy of his character. In his early life he was liable to spitting of blood on catching cold, and through life to feverish attacks, which he attributed partly to his parents having had him bled twice a-year in his youth, as a preservative of health. He was of middle stature, robust, and active. His portrait, and also that of his father John Monro, may be seen in the collection at Surgeons' Hall. The engraving prefixed to his works presents the same substantial and pleasing expression. The character of Monro by Lavater, on seeing his portrait, without knowing who it represented, may be seen in Hutchison's Biographia Medica (ii. 151). It is not much amiss, but too rhapsodical, and too long to be quoted here. Lavater was not deceived by the trick of sending him a very different portrait for that of Goethe, but when he saw Goethe he was astonished to find him so unlike what, according to Lavater's fancy, he ought to have been.

at the same time a calm and placid man. He had family and friends influential and plenty, but the work he had to do was of a kind at which friends could only stand and look on. He had to do a new thing in Edinburgh; to teach anatomy, and to provide for the study of it, in a town of then only thirty thousand inhabitants, and in a half civilized and politically disturbed country; he had to gather in students, to persuade others to join with him in teaching, and to get an Infirmary built. All this he did, and at the same time established his fame not only as a teacher but as a man of science, and gave a name to the Edinburgh school which benefited still more the generation which followed him. This really great and good man, therefore, well earned the title, often given him, of father of the Edinburgh medical school.

Alexander Monro *Secundus*.

The second Monro was appointed professor of anatomy at the age of twenty-one, before he had taken his degree, or finished his studies in the University. He was a clever boy, had received an excellent home and University education, and it was his father's plan that he should succeed him. He showed an early inclination to medicine, especially to anatomy, and studied under, besides his father, Alston, Rutherford, Plummer, Whytt, and Robert Smith. He must have begun early and worked earnestly at anatomy, as we find him relieving his father of most of the evening lectures while yet only in his twentieth year, and probably in the third formal winter session (1753–4) of his medical studies. His father having that year found the lecture room too small for the increasing class had resolved to repeat the lecture in the evening, but finding this irksome, gave over the evening lecture to young Monro, who acquitted himself well. He was appointed colleague and successor to his father on 19th June 1754.[1]

[1] There are discrepant statements as to when, and at what age, he was appointed. Besides scattered references and Town Council minutes, there are the following more formal notices of Monro *secundus*. 1818, Harveian Oration, by Monro's colleague and friend Andrew Duncan senior; 1835, the sketch in Chambers' Biographical Dictionary of Eminent Scotchmen (iv. 18), chiefly taken from Duncan; 1840, "Essays and Heads of Lectures on Anatomy, Physiology, Pathology, and Surgery, by the late Alex. Monro *secundus*, with a Memoir of his Life, by his Son and Successor"—the "Memoir" not a very satisfactory performance, but containing valuable letters from Drs Gregory,

The argument in the father's petition to the Town Council was —that by and by he would require a successor, that no one could be expected to forego other prospects and devote himself to anatomy without due encouragement, but that anatomy is the foundation of the school and requires to be taught by one who is master of his business; that he himself was so encouraged by the promise of the chair when yet a student; that his youngest son Alexander had appeared to him for some years to have the necessary qualities, and had already proved that he was equal to the office; that if they would now appoint him, he would have the young professor educated under the best masters in Europe, and that he should have all his father's papers, books, instruments, and preparations, and all the help he could give him. The petition was supported by his colleagues in the University, and was at once granted. The appointment fortunately proved an excellent one.

Having completed his studies, and taken his degree in the University, in October 1755, the bargain for his farther anatomical training was faithfully carried out by sending him to London, Ley-

Robertson, and Carmichael Smyth. The writers agree in giving 12th July 1755 as the date at which he was made professor; and, as to age, the Memoir says he was then only 20, Duncan that he had just entered on his 22d year, and Chambers' Biog. that he had just entered on his 23d year. The date of the Town Council minute (given in full by Bower, ii. 369, and confirmed by Dalzel's extracts from the Town Council Records, ii. 425) is 19th June 1754. Monro was born either in March or May (Duncan and Chambers, 20th March; Memoir, 20th May) 1733. He was, therefore, when elected professor, on 19th June 1754, twenty-one years of age, and either three months, or one month, more. This accords with the statement (Bower, ii. 372) that the petition was "accompanied with a paper, attesting his age to be above twenty-one years." If the date 12th July 1755 refers to the subsequent ceremonial of admission by the Senatus, the age given in the Memoir would be still farther from being correct; Duncan's words are "admitted into the bosom of the University;" in the Memoir it is "appointed." But none of them refer to the Town Council minute, which is the appointment. Dalzel gives also, from the Town Council Records—"10 July 1754, Alex. Monro senior, and Alex. Monro junior qualify in Council." And "18 July, Commission to them signed."

In the list of the Senatus Academicus, given in the appendix to Professor Craufurd's "History of the University of Edinburgh" (1808, p. 170), the dates given for Monro *secundus* are, 12th July 1755 (instead of 19th June 1754); for his being made professor of surgery as well as of anatomy, 20th August 1777 (instead of 16th July 1777); and for his son being conjoined with him, 15th December 1798 (instead of 14th November 1798). These dates evidently refer merely to the Senatus' minutes of admission, following some time after the Town Council minutes which conferred the appointments.

den, Paris, and Berlin, between which he spent two years and a-half, including three winter sessions, chiefly in the study of anatomy. During his short stay in London, he attended the lectures of William Hunter, who was fifteen years his senior; in Leyden he studied under Albinus, but it was from the German anatomist, Meckel, that he had the most valuable part of his foreign training. He was not only the pupil of this minute and scientific anatomist, but lived in his house during his long stay in Berlin, having thus every opportunity of becoming familiar with the newer methods of anatomical research. To this period, and his obligations to Meckel, he often afterwards referred in his lectures. Thus Monro, instead of being plunged at once into the time-absorbing occupation of teaching, enjoyed the inestimable advantage of having a few years, free from other care, to work silently at the science which he was to teach.

Returning to Edinburgh in the summer of 1758, now twenty-five years of age, he commenced his duties as professor, in winter. The father, whose strength had begun somewhat to fail, after giving only a few lectures of the course, gave place to the son. He commenced boldly. The father had embraced and to the last taught Leuwenhock's doctrine respecting the blood. This young Monro began by controverting. The novelty of his matter combined with the clearness of his style, is described by one who was present as having acted like an electric shock on the audience.[1] It was at once seen that he was master of his subject and of the art of communicating knowledge to others; his style was lively, argumentative, and modern compared with that of his more venerable colleagues; and from the beginning onwards, for half a century, his career was one of easy and triumphant success.

As a lecturer, Monro is described as clear, earnest and impressive, eloquent without display, and at the same time grave and dignified. An old pupil (Dr Robertson of Northampton, in Memoir) speaks of "that copious stream of information—medical, surgical, physiological, and pathological,—that flowed from him almost without art or effort." For fifteen years he had written only the heads of his lectures, which he frequently improved, till he purchased a copy

[1] Dr Carmichael Smyth (Memoir, p. 13). In young Monro's dedication of his graduation thesis to his father, he goes on to say—"tibi, PATER, PRÆCEPTOR OPTIME, Filius, Discipulus, studiorum Æmulus, Dissertationem hancce, animi monumentum grati, dicatum accipias, precor."

of his own lectures from a pupil; but, following his father's example, he did not even use notes in the lecture-room.[1]

The attendance on the anatomy class in each of the first thirty-one years under Monro *primus*, has already been noticed. Monro *secundus* has given the attendance during the seven decennial periods up to 1790.[2] His numbers divided by ten will give the average yearly attendance during each period.

From 1720 to 1730,	670.	Average yearly attendance,	67
„ 1730 „ 1740,	1090.	„ „	109
„ 1740 „ 1750,	1476.	„ „	147
„ 1750 „ 1760,	1327.	„ „	132
„ 1760 „ 1770,	1942.	„ „	194
„ 1770 „ 1780,	2870.	„ „	287
„ 1780 „ 1790,	3425.	„ „	342

The total (12,800) he farther divides thus,—1720–1759 (Professore Alexandro Monro, Patre), 4431; 1759–1790 (Professore Alexandro Monro, Filio), 8369. In Monro's mode of enumeration, the same student is reckoned more than once. The number of individuals educated by Monro may be reckoned at one-half to one-third of that obtained by his method. Monro *secundus* taught for seventeen years afterwards (till the beginning of 1808–9), and his class is said to have increased to 400. Dr Gregory (Letter in Memoir, p. 10) says the attendance was "generally from 200 to 400 every year," and that, during the whole "fifty years or more that he taught anatomy and surgery, his lectures were attended in all by 14,000 students." Deducting the 8369, this would leave 5631 for these seventeen years, with an average attendance of 331; but as the number of students of medicine in the University rose from under 500 in 1790, to over 800 in 1807–8, there need be no difficulty in accepting Dr Gregory's statement as literally true, that Monro's class reached to 400.[3]

[1] The following is from the pen of Monro *tertius*, in 1840. "He was totally devoid of conceit, and unlike many professors who have lectured for nearly half a century, did not remain satisfied with the lectures he had written at the beginning of his career" (Memoir, p. 151).

[2] Medical Commentaries, vol. xv., p. 410, 1791, in which may be seen a copy of a document containing this information, which was deposited by Monro *secundus* in a bottle below the foundation stone of the new anatomical theatre in the University, on 31st March 1790.

[3] I may mention that in the year 1853–4, during which I taught the anatomy class in the University, in the absence of my friend the present professor from illness, my own pupils being joined with those in the University, the number in the winter session was 447.

Except probably, during the earlier years, the above numbers fall considerably short of representing the entire number of students of medicine attending the University. Monro *primus* mentions, in 1754 (Town Council Minute, January 19, 1754), that the number of students of medicine in Edinburgh had been "more than 200 for many years past." The number of students in each Faculty from 1790–91 to 1821–22, is given in the second and third appendix to Craufurd's History of the University. Through Professor Balfour, Dean of the Medical Faculty, Mr Alexander Smith, Secretary to the University, has kindly furnished me with the number of students of medicine entered in the matriculation list of the University in each year as far back as 1763–4, previous to which the form in which the names are preserved is that of the various class lists. It will suffice to give the average of decennial periods, the first being the average of seven years.

From 1763 to 1770.		Average	240
„ 1770	„ 1780.	„	301
„ 1780	„ 1790.	„	382
„ 1790	„ 1800.	„	560
„ 1800	„ 1810.	„	739
„ 1810	„ 1820.	„	820
„ 1820	„ 1830.	„	849

In several years the number exceeded 900, as in 1810–11, 1814–15, 1815–16, 1824–25, and 1825–26. In 1810–11, the number was 934; in 1824–25, it was 932.

In their applications to the Town Council, the Monros did not fail to remind the civic rulers that, "besides the youth being well educated," the medical school brought annually a large sum of money to be spent in the city. On 19th June 1754, at least £10,000 a-year is mentioned; and on 4th July 1764, the Council is reminded that during the past forty years the town has received £300,000 from the students of anatomy. This mode of reckoning allows £50 a-year for each student. In a memorandum by Monro *secundus*, of date October 12, 1807,[1] he reckons that the students who attended his father (the number of whom he here gives as 3451, from 1720 to 1758) brought, at the rate of £50 *per annum*, £172,550; and states that "During the last 48 years, 13,404 students have attended

[1] Annals of the Parish of Colinton, p. 136, by Dr Thomas Murray, who informs me that he saw the original.

us (Dr Monro senior and his son), who, at the rate of £80 *per annum*, have expended in all £1,072,320. During this period 5831 students, or nearly two-fifths of the number, came from England, Ireland, and other countries; and without supposing that they expended more than the average above stated, they brought into Scotland £466,480 sterling."[1]

Monro's earlier writings were chiefly controversial, disputing claims to priority in discovery with William Hunter, Hewson, and others. He had taught for twenty-five years, and was fifty years of age before he began to publish the great works on which his more permanent reputation as an anatomist rests. Beginning in 1783, these appeared at intervals during the next fourteen years, the last in 1797, a year before his son was conjoined with him in the anatomical chair. My limits will permit me to give merely a list of his works.

[1] I find the following with reference to the Monros' anatomical rooms and museums:—

It has been already mentioned that Monro *primus* obtained in the University, in October 1725, a "theatre for public dissections;" and, in June 1736, a room for "teaching his private sessions only." On 4th July 1764 (Town Council Records, Dalzel ii, 434), he applied for and obtained £300 to build a new theatre, he advancing the £300, and to be repaid, £100 annually for three years. On 19th December of the same year, the Council agreed to pay "not only the £300, as formerly, to Dr Monro for his theatre, but afterwards £80, 19s. 2d. in June 1768, upon his granting, before receiving the first payment (namely, the first £100 of the £300), an obligation to convey to the University, at his death, his whole anatomical preparations, unless the circumstances of his family should alter, so as to make it necessary for him to dispose of them for their behoof." Dalzel gives these proceedings of Council as relating to Monro *primus*. In petitioning for the appointment of his son, in 1754, he had engaged that he "should have all his father's papers, books, instruments, and preparations." The above £80, 19s. 2d. was probably for what the theatre cost over the £300, and, in paying it, the Council had taken occasion to ask an obligation that his anatomical preparations should be left, at his death, to the University. In the course of the erection of the new University buildings, the foundation stone of the part assigned for the anatomical theatre and rooms was laid by Monro *secundus*, on 31st March 1790 (Med. Commentaries, xv. 410, already referred to); and the new theatre was opened by him at the commencement of the winter session, on the last Wednesday of October 1792 (Med. Com. xvii. 528). In 1800, Monro *secundus* presented his museum to the University, with a descriptive catalogue, which was afterwards printed (Memoir, 150–1, and Bower, iii. 365).

In 1754, while still a student, two papers, on the Seminal Vessels, and on Gravid Uteri, in Vol. I. of the Physical and Literary Essays.

1755, Graduation Thesis, "De Testibus et Semine in variis Animalibus."

1757, when in Berlin, "De Venis Lymphaticis Valvulosis."

1758, "Observations, Anatomical and Physiological, wherein Dr Hunter's Claim to some Discoveries is examined;" and, "Answer to the Notes on the Postscript to Observations Anatomical and Physiological."

1770, "Examination of the Claim to the operation of Paracentesis Thoracis, and to the Discovery of the Absorbents in Oviparous Animals."

Several papers in the "Essays Physical and Literary," vols. ii. and iii., and in the "Medical Commentaries," vols. iii. and v.; especially in 1771, on the Effects of Opium, Ardent Spirits, and Essential Oils.

1783, "Observations on the Structure and Functions of the Nervous System."

1785, "The Structure and Physiology of Fishes explained and compared with those of Man and other Animals."

1788, "Description of the Bursæ Mucosæ of the Human Body."

1792, "Description of a Human Male Monster," Trans. Roy. Soc.

1793, "Experiments on the Nervous System, relative to the Nature and Effects of Animal Electricity."

1794, "Observations on the Muscles, and particularly on the Effects of their Oblique Fibres."

1797, "On the Brain, the Eye, and the Ear."

Many Libraries, public and private, contain MS. volumes of notes of his Lectures on Anatomy, Lectures on Physiology, and Lectures on Surgery.

Although it might well be believed that Monro had work enough with such a class, and with his anatomical researches, he was at the same time busy in practice, being, in fact, the leading physician of his time. In the words of Dr James Gregory, his junior by twenty years, his colleague, and, as a physician, so far his rival, for upwards of thirty years, Monro was "for more than half a century at the head of the great medical school of Edinburgh, and for the greater part of that time unquestionably at the head of his profession in Edinburgh and in Scotland." (Letter in Memoir, p. 9.) In his interesting and characteristic letter, Gregory goes on to describe Monro as his very ideal of a practical physician and consultant. The illustrious Cullen began as professor a year after Monro's appointment, but had the comparative disadvantage of being a stranger in Edinburgh. Monro's name, however, is not to be put along side of Cullen's as a great physician, nor has he left his mark on medicine as Cullen has. His true reputation was as anatomical teacher and anatomist. Monro was also consulted in important surgical cases, though not himself an operating surgeon. He claimed to be also professor of surgery, and, on 16th July 1777,

obtained a new commission from the Town Council, expressing that he was professor of surgery as well as of anatomy.[1]

Although in 1798 his son was conjoined with him in the chair, he continued for ten years to give the greater part of the course. Dr Gairdner informs me that he heard him deliver the introductory lecture in session 1808-9, and that it was the last lecture he gave. He at the same time retired from practice, after which he lived for nine years, enjoying a peaceful old age. He died on 2d October 1817, in his 85th year.

Monro was a man of middle stature, vigorous and athletic, with a large head, and a countenance expressive of intelligence, solidity, and humour. Busy as he was he enjoyed society, in which his anecdotal powers shone; he was an enthusiastic admirer of the theatre;[2] and he took great pleasure in cultivating his garden, and in planting and ornamenting the estate of Craiglockhart, which his success in his profession had enabled him to purchase in 1779.[3]

In regard to how far the second Monro deserved his great reputation, it must be admitted that he had absolutely no difficulties to contend with as his father had, that he was born to a great name and a ready-made position, that he had every advantage which education, friends, and place could secure, and that his position was one in which a somewhat better than ordinary man is, in his life time, apt to be mistaken for a great one. In the words of our great dramatist, some men are born great, some men achieve greatness, and some have greatness thrust upon them. The first Monro certainly achieved his greatness, and the second as certainly was

[1] That he had resolved to follow medicine rather than surgery, is seen in his joining the College of Physicians on his return from the Continent in 1758. It may be mentioned that, on 15th June 1757, on the request of Monro *primus*, a new commission was granted to him and his son "as they were now both Doctors of Medicine, which none of them had been formerly" (Dalzel, ii. 427). This can only have been to gratify the father. The son graduated before the father, having taken his degree in October 1755, while it was conferred on the father on 1st January 1756.

[2] "No man enjoyed more heartily the laugh even at his own profession, when Foote personated the President of the College of Physicians, and Weston was subjected to examination, in the character of Dr Last. Nay, it has even been alleged, that Dr Monro enriched the wardrobe of the theatre, by sending his own red cloak to be the outer garment of the Mock Doctor." (Duncan, Harveian Oration, 1818.)

[3] Annals of the Parish of Colinton, p. 135. Dr Murray informs me that Monro did not reside at Craiglockhart, and that the mansion-house was built only in 1835 by the third Monro.

born great. But the most dangerous of successions is that to a famous father, and the most trying position for reputation is that of having brilliant colleagues. Among the colleagues of the second Monro, in Medicine, were Cullen, Joseph Black, the Gregorys, the Rutherfords, the Homes, John Hope, and latterly Dr Duncan, senior, and Charles Hope; and in the University at the same time were Adam Ferguson, Dugald Stewart, Playfair, Dalzel, Robison, Hugh Blair, and Principal Robertson. It was a period of great men, and among all these men Monro held his place intellectually and socially, and in his own Faculty was all that is implied in describing him as the acknowledged head of the medical school.

To be at the same time the successful teacher of so splendid a class, the leading physician of his day, and the author of works of original research in anatomical science, formed a rare combination, the effect of which, extending and accumulating over half a century, may enable us to understand the greatness to which the reputation of the second Monro grew, both at home and abroad, and the honour in which his name is held among anatomists, and in the Edinburgh School.

Alexander Monro *Tertius.*

The third Monro was appointed joint-professor with, and successor to, his father on 14th November 1798. He had graduated in medicine at the University in the previous year (on 12th September 1797), and was nearly twenty-five years of age when he received the appointment to the anatomical chair. The father, however, continued for ten years after this to be the chief occupant of the chair, giving during the first two years the whole of the course, and during at least six years more, the greater part of it; retiring, as already mentioned, after giving the introductory lecture in session 1808-9. Monro *tertius* continued professor till 1846, retiring from the chair before the end of the winter session 1845–6. He was thus, in all, for 48 years professor of anatomy, the reputation of the chair depending on him for 38 years, from the time when he became sole professor. The influence of Monro *tertius* on the Edinburgh school falls to be considered rather with a later period. The minute of Town Council containing his appointment, with the reasons assigned, has not been before published, and may be read with interest.

14th November 1798.—"To the Right Honble. the Lord Provost, Magistrates and Council of the City of Edinburgh, the representation and petition of Dr Alex. Monro, senior, Physician and Professor of Medicine, Anatomy and

Surgery in the University of Edinburgh. Dr Monro begs leave to represent to the Honble. Patrons of the University, that for teaching properly some of the branches of Medicine, particularly chemistry and anatomy, where much labour and many experiments are necessary, not only for illustrating the doctrines which are taught, but for the improvement of the science, it is much for the advantage of the University and of the students that to a Professor advanced in life, a younger colleague, disposed to co-operate with him, should be conjoined. The late appointment of an assistant to the Professor of Chemistry is a striking proof of the propriety of such a measure. Dr Monro was also very sensible that in consequence of his own early appointment as assistant to his father, he devoted himself much more to the study and practice of anatomy, and of course became much better qualified to teach than he should have been without such a prospect before him. As yet his zeal for the improvement of this branch and his assiduity in teaching it are unabated; but he daily becomes more and more sensible of the advantages the students would derive from his having conjoined with him a colleague more capable of undertaking the laborious parts of his course, and of prosecuting inquiries and performing experiments for the farther improvement of the science. He therefore humbly petitions the Honble. Patrons of the University that they will be pleased to nominate as colleague and successor to him his eldest son Alexander, who is now nearly twenty-five years of age, and who after having attended for eight years past his courses of lectures, and, during that period, all the other medical classes repeatedly, and having received last year from this University the degree of Doctor of Medicine, has since that had the advantage of attending the anatomical and other medical classes in London, and the practice of the London Hospitals. If the Honble. Patrons are pleased to appoint his son, it is his intention to return to London and afterwards prosecute the practice and study of Anatomy in the most celebrated Universities of Europe in order that nothing may be wanting to place the teaching of this branch on the most extensive and respectable footing. Before presenting this petition to his Honble. Patrons, Dr Monro thought it a duty he owed to them as well as to his colleagues in the medical department to show his petition to them for their opinion, as their interests were deeply concerned, and that they had had the best opportunity of observing the diligence and knowing the qualifications of his son, and he has the satisfaction to find that they unanimously approve of his petition and join in the prayer of it. He is with due respect their most humble servant, Alexander Monro, Professor of Medicine, Anatomy and Surgery. September 24th, 1798.

"Thereafter the Act of Council dated the 7th day of March 1798 against electing any professor in the College until a vacancy shall happen, was read, when old Provost Elder represented that though he approved of the Act of Council against conjoining persons with professors then in office, yet in his opinion there may be cases where such a resolution ought to be departed from, and in his opinion a stronger case than the present could not occur, not only for the reasons mentioned in the petition, which are very strong, but also on account of the unanimous opinion of the professors of Medicine in the College, bearing that the appointment of Dr Monro as a colleague to his father would be attended with much advantage to the students and to the University of Edinburgh. And therefore he moved that the Act of Council be rescinded in

so far only as respects the present application; which motion was seconded by the Lord Provost, and which he the more readily did on account of being informed by some of the Professors that Dr Alexander Monro, junior, is already fit and well qualified to succeed his father. To which Bailie Henderson adhered and was unanimously agreed to.

"Thereafter read resignation by Dr Alex. Monro of the foresaid office, which is of the following tenour:—'I Dr Alexander Monro, Physician, hereby resign into the hands of the Lord Provost, Magistrates and Council of the City of Edinburgh, Patrons of the University, my commission from them of Professor of Medicine, Anatomy and Surgery, and at the same time, petition them to re-elect me into these offices and to conjoin with me as my colleague and successor my eldest son Alexander, Physician and Fellow of the Royal College of Physicians in Edinburgh.' Of which resignation the Council accepted and declared the foresaid office of Professor of Medicine, Anatomy and Surgery in the University vacant.

"All of which being taken into consideration the Council rescinded the foresaid Act of Council in so far only as respects the appointment of Dr Monro junior, and confirmed the said Act in other respects as tending to getting a better choice of candidates upon a vacancy, and the Council in this instance elect, nominate, and appoint Dr Alex. Monro senior, and his son Dr Alex. Monro junior to be joint Professors of Medicine, Anatomy and Surgery in the College of Edinburgh *ad vitam aut culpam* with the benefit of survivancy to the longest liver, upon the conditions following—viz.—Primo, that the said Dr Alex. Monro senior, or Dr Alex. Monro junior, or one or either of them, shall officiate and give regular lectures as formerly. Secondly, it is hereby declared that the said Dr A. M. senior and Dr A. M. junior shall be subjected and liable to such rules and regulations as the Magistrates and Council have already made or may hereafter make with respect to the said office, hereby giving and granting and disponing to them, or survivor of them, the fees or emoluments appertaining to the said office, and appointed the clerks to extend a commission in favour of Dr M. senior and Dr M. junior in the terms mentioned, and appointed Bailie Henderson to instal them in the foresaid office in the usual manner."

The writings published by Monro *tertius* are voluminous.

1797. Diss. Inaug. de Dysphagia.
1803. Observations on Crural Hernia.
1811. The Morbid Anatomy of the Human Gullet, Stomach, and Intestines. 2d ed. in 1830.
1812. Dissertation on the varied direction of the Fibres of the Muscles.
1813. Outlines of the Anatomy of the Human Body, 4 vols.
1818. Observations on the different kinds ot Small Pox, and especially on that which sometimes follows Vaccination.
1825. Elements of the Anatomy of the Human Body, 2 vols.
1826. Observations on Spasm of the Canals for the Food, Bile, and Urine.
1827. Observations on Aneurism of the Abdominal Aorta.
1827. The Morbid Anatomy of the Brain.
1831. The Anatomy of the Brain, with some Observations on its Functions.
1842. The Anatomy of the Urinary Bladder and Perineum of the Male.

Monro *tertius* also engaged in practice as a physician. He spoke Latin well, and was fond of paintings. His talent as a teacher of anatomy was not great.

The periods of the three Monros may be noted shortly thus:—

Monro *primus*. Born 8th September 1697. Professor of Anatomy for 38 years (1720–1758), from the age of 22 to the age of 60. His son nominally joint-professor with him during the last 4 of these years. Retired from the anatomical chair 1758. Died 10th July 1767, aged nearly 70.

Monro *secundus*. Born 20th March (or May) 1733. Professor of Anatomy for 54 years (1754–1808) from the age of 21 to the age of 75—viz., nominal joint-professor with his father, 4 years; sole professor, 40 years; jointly with his son, 10 years. Retired in 1808. Died 2d October 1817, aged 84.

Monro *tertius*. Born 1773. Professor of Anatomy for 48 years (1798–1846), from the age of nearly 25 to the age of 72—viz., joint-professor with his father for 10 years, sole professor 38 years. Resigned the anatomical chair in 1846. Died 1859, aged 85, or 86.

The periods during which they were acting professors of anatomy were respectively 38, 50, and 38 years; and thus the three Monros occupied the Chair of Anatomy in the University for the long period of 126 years.

John Bell.

We now go back to the time when the second Monro was in the middle of his career. Among the crowd of students in Monro's class-room, there was one remarkable for his keen eye, intelligent countenance, and small stature. It struck this youth that, although Monro was an excellent anatomist and teacher, the application of anatomy to surgery was neglected. He saw his opportunity, and took his resolution accordingly. This was John Bell.

His profession had been selected for him by his father, who, in gratitude for the relief received by a difficult surgical operation, which he had undergone a month before the birth of his son John, had resolved to dedicate him to the service of mankind as a surgeon. He was bound apprentice in 1779, for five years, to Mr Alexander Wood. As Monro had never been an operating surgeon, the deficiency in his teaching would, we might suppose, be evident enough; but the merit of John Bell's early surgical discrimination is appreciated only when we remember that there was no surgical

anatomy, as now understood, in the Edinburgh school till introduced by himself. He saw also that it was not merely demonstration but the practice of dissection which was wanted. In his own words—"In Dr Monro's class, unless there be a fortunate succession of bloody murders, not three subjects are dissected in the year. On the remains of a subject fished up from the bottom of a tub of spirits, are demonstrated those delicate nerves, which are to be avoided or divided in our operations; and these are demonstrated once at the distance of one hundred feet! nerves and arteries which the surgeon has to dissect, at the peril of his patient's life."[1] His resolution to become a lecturer on anatomy was also original, the Monros having been, since the commencement of the Medical School, the only teachers of this department in Edinburgh,[2] although the

[1] "Letters on the Education of a Surgeon," etc., by John Bell, 1810, p. 579.

[2] Before Bell's time, besides the courses delivered in the University, Dr George Martin, from St Andrews, had read lectures on Medicine in Edinburgh, with encouragement from Monro *primus*, who afterwards superintended the publication of Dr Martin's medical and anatomical writings. (Duncan, Harveian Oration, 1780; and Bower, ii. 191). Dr Andrew Duncan began in 1770 to give a winter course on the Theory and Practice of Medicine, and a summer course on Materia Medica, till 1789, when he was appointed Professor of the Institutes of Medicine in the University. Chemistry was taught by Dr Charles Webster, beside Dr Duncan, for more than ten years; and afterwards by Mr William Nelson, who began to teach in 1790 and died in 1800. Dr Duncan began, in 1776, to give lectures on the cases at the Dispensary which he had founded; and Dr Webster joined him in this. Dr John Brown also gave lectures, during the delivery of which he illustrated his system by having repeated recourse to the whisky bottle which stood on the table. He left Edinburgh in 1786 (Chambers' Biog. Dict. of Eminent Scotsmen, i. 138). Dr John Aitken gave instruction in several departments of medical study. In the "Notice of the Professional Life of John Walker, F.R.C.S.Ed., by Mr W. Brown, F.R.C.S.," 1851, the following reference to Aitken's teaching occurs. Walker having gone, at the age of 21, to study for a year in London, writes to his father in Edinburgh, in 1787,—"Mr Cruickshank's lectures are little better than the demonstrations of Aitken. Monro is as far superior in style and phraseology as you can well imagine any two things." This John Aitken entered as Fellow of the College in 1770. His first publication, 1771, is entitled "Essays on Several Important Subjects in Surgery. Illustrated with copperplates, by John Aitken, surgeon, of the College and Incorporation of Surgeons in Edinburgh," and is dedicated to Monro. In his next publication, 1782, entitled "Elements of the Theory and Practice of Physic and Surgery," two vols., he is styled also M.D., one of the Surgeons to the Royal Infirmary, and Lecturer on the Practice of Physic, and on Anatomy, Surgery, and Chemistry. In his "Principles of Midwifery," which reached a third edition in 1786, dedicated to

anatomy class had, for some time before Bell began to teach, numbered over 300. The rapid and steady increase in the number of students resorting to Edinburgh, as we have seen, would not fail to encourage Bell in his resolution; and, as, during the time he lectured (1786 to 1800), the numbers rose from 400 to over 600, he would find an ample field.

After finishing his medical education he travelled for a short time in Russia and the north of Europe, and returning to Edinburgh, entered as a Fellow of this College, on 14th August 1786. He was now twenty-three years of age, having been born on 12th May 1763. The statement that he commenced by lecturing on

the Duchess of Buccleuch, he is styled "Lecturer on Anatomy, Surgery, and Midwifery;" and it is dated from the "Edinburgh Anatomical Theatre, March 1, 1786." "Lecturer on Anatomy, Surgery, and Midwifery," occurs also on the title-page of his anatomical books, which are also dated from the "Edinburgh Anatomical Theatre, 1st November 1786," and have a portrait of the author prefixed. They are "Principles of Anatomy and Physiology," 2 vols.; and "A System of Anatomical Tables with Explanations." The latter is only the text of the first volume of the former with the engravings of both volumes. The artist's name is not mentioned. The engravings represent all the systems of the body, and must have been a laborious and expensive undertaking. He says, in his preface, that he has "delivered twenty-four public courses of lectures on these sciences" (Anatomy and Physiology). The statement in Chambers' Scottish Biography (article, Barclay, p. 139),—"Dr John Aitken, a member of the Corporation of Surgeons, also gave a course of anatomy. He published engravings of the bones, muscles, etc., accompanied with tables. He was well attended, and he was generally esteemed a good lecturer,"—is evidently intended to apply to this John Aitken. The much later John Aitkin, M.D., who assisted Dr Barclay, and afterwards lectured on anatomy, entered as a Fellow of this College in 1817 (his brother, Thomas Johnston Aitkin, M.D. in 1826). The name of the early John Aitken is sometimes printed Aiken, and is liable to be mistaken for that of John Aikin (also sometimes printed Aiken) the English surgeon who wrote several medical, surgical, and other books, from 1770 to 1795.

As Aitken taught, or professed, what was represented in the University, at the time, by at least four separate courses (Practice of Physic, Anatomy and Surgery, Chemistry, and Midwifery), it is difficult to look on him but as a kind of grinder, with classes meeting at what he styles the "Edinburgh Anatomical Theatre," where he could also give demonstrations,—rather than as entitled to take rank as a scientific lecturer, or as a teacher of one department more than another. After beginning with some lectures on midwifery, John Bell taught only anatomy and surgery, which always went together. Notwithstanding Aitken having given instruction in anatomy, among other things, it is, therefore, doubtful how far it would be correct to say that John Bell was not, properly speaking, the first extra-mural lecturer on anatomy.

"Surgery and Midwifery" is so far borne out by an entry in the Surgeons' Records.

2d February 1787.—"Mr John Bell got the use of the Hall for lectures on Midwifery."

15th May 1788.—Enacted "that in future the use of their Hall shall not be granted to any member of the College for more than one course of lectures." Then follows: "Mr John Bell having requested the use of the Hall for one course of lectures, the same was granted."

8th October 1788.—Mr John Bell was granted a feu of "30 feet in front of the ground lying to the south end of the Hall." Same date it was agreed that Mr John Bell, in respect of his becoming one of their feuars, should be allowed to deliver his lectures in the Hall till his house is ready for his accommodation.

He is stated to have built this house in 1790. It was built for the purposes of an anatomical school, and continued to be occupied as such after the time of the Bells. It stood to the east end of old Surgeons' Hall, a little back; and was known in our time as the Lock Hospital, attached to the Royal Infirmary.

His lectures were numerously attended, and rapidly brought him into notice. Although John Bell's name has come down to us chiefly as a surgeon, he was no mere surgical anatomist, as his writings show; and besides being anatomist and surgeon he was an accomplished man. He was an accomplished classical scholar, extensively acquainted with ancient and modern literature, an accomplished musician, a skilful artist, and, as a lecturer, he was not only a ready and polished speaker, but his style was vivid beyond what had been hitherto known in the Edinburgh school. From causes which it would be easy to trace, the ordinary Edinburgh tradition of John Bell has descended from the unfriendly side, and with no little exaggeration or distortion. To the unprejudiced student of his writings, the alleged exaggeration or romance of his narrative appears but the result of investing what is in ordinary hands a dull subject, with the charms of that fine style, and intense descriptive power, of which Bell was so great a master. That he was deeply involved in controversy is true, but he does not appear to have been the aggressor, except in so far as the step of his venturing to teach, and the freedom with which he expressed his own views, could be so regarded; and, though nothing loth to accept Dr Gregory's challenge, we can see that he was not a jealous, ill-tempered, or bitter man, but that he bore himself buoyantly through the long controversy, confident both in the

position which he maintained and in his ability to defend it. The position which John Bell exemplified and defended, was one which no man will now venture to dispute, that surgery must be based on anatomy and pathology, a doctrine for which there was at that time, in "the windy and wordy school of Edinburgh," neither acceptance nor toleration. A combination led by Dr James Gregory, Professor of Practice of Medicine, was formed against Bell, and the whole force of Gregory's great wit, mixed with, to us, inconceivable personality and scurrility, was launched against Bell, not merely in pamphlets, but in volumes, and even in placards over the town.[1] Thus attacked, Bell replied, and his style, severe and personal though it is, is more dignified than that of Gregory.[2] It was a rash thing to attack John Bell. He replied, not merely standing on the defensive, but, like a capable general, carrying the war into the weak point of the enemy's camp, selecting for his subject the many-volumed System of Surgery by Dr Gregory's ally, Mr Benjamin Bell.[3] Those who know the book will readily believe that its reputation did not survive the attack. As John Bell himself says, "I neither mistook my bird, nor missed my shot," and, "on the day in which the second number was published, the great surgical work of Benjamin fell down dead." Although from our point of view, Gregory's plan for the service of the surgical hospital, at least as since greatly improved upon, was better than the rotation system (which, however, virtually gave Bell a permanent connexion with the hospital), no one can understand that controversy without bearing in mind that it was at least one of the aims of Gregory's party that John Bell, the only true surgeon in Edinburgh, might be ex-

[1] The first attack was in an anonymous pamphlet entitled "A Guide to the Medical Students attending the University of Edinburgh"—which as Bell says "openly and impudently professed but one object, viz., to warn students against attending Mr Bell's lectures." This attack he treated with silence. The next was on his reputation as an author, entitled a "Review of the Writings of John Bell, Surgeon in Edinburgh, by Jonathan Dawplucker." "This malignant attack," says Bell, "was stuck up like a Play-Bill in a most conspicuous and unusual manner, on every corner of the city; on the door of my lecture-room, on the gates of the College, where my pupils could not but pass, and on the gates of the Infirmary, where I went to perform my operations." ("Letter," etc., p. 503).

[2] Dr Gregory could write—"Any man, if himself or his family were sick, should as soon think of calling in a mad dog, as Mr John Bell, or any who held the principles he professes."

[3] No. 2. Being a Review of the Surgical Works of Mr Benjamin Bell, by Jonathan Dawplucker. He made no secret that he was the author.

cluded from the Infirmary. When the Managers and Gregory's party finally carried it over Bell and the Incorporation of Surgeons, in 1800, Bell was not one of those specially appointed to the surgical hospital under the new system. From the last "Letter" (XVIII. On Hospital Managers, and Hospital Surgeons) in Mr Bell's large controversial volume, some idea may be formed of the unhappy results of this error. It contains some eloquent passages on the importance of anatomical training to a surgeon;[1] and his thrilling account of scenes which now occurred in the operating theatre, reads a solemn warning to Hospital Managers, and a timely caution to those who would aspire to the position of Hospital Surgeon, without having the anatomical training and natural qualities—wanting which, talents and attainments which would command eminence in other departments of the profession, will avail little in the operating theatre.

On the loss of his connexion with the Surgical Hospital, Bell retired from teaching,[2] having thus taught, in all, for not more than thirteen years—from the age of 23 to the age of 36. In estimating John Bell's merit in the reputation he made, we must bear in mind the comparatively short time during which he taught, and that he was early deprived of the position of Hospital Surgeon. He now

[1] As he somewhere says—The surgeon should be as familiar with the anatomy of the parts as if he had made them.

[2] Notices of John Bell are given—1. In Chambers' Biographical Dictionary of Eminent Scotsmen, 1835; the best account. 2. In Knight's English Cyclopædia, Biography, vol. i., 1856. Chambers says that he ceased to lecture in 1796, and in consequence of the increase of his practice. Knight says, "after the loss of the Infirmary, Mr John Bell never resumed his lectures." The statement that he ceased to lecture in 1796 is irreconcilable with the fact that his brother Charles, who succeeded to his anatomical school, did not become a Fellow of the College till 1st August 1799; and with various dates in his volume already alluded to (Letters on the Education of a Surgeon, etc., 1810). The placards advertising the first "Dawplucker" pamphlet, he tells us (p. 503), were stuck up "on the door of my lecture-room," and that pamphlet appeared in 1799 (p. 508). 2d January 1801 is the date of a letter, in which the Infirmary Managers, while allowing the Fellows of the College of Surgeons to attend the ordinary visit, required that "they shall behave with proper respect and decorum to the attending surgeons," and "shall not on any account make any remarks on their practice and conduct" (p. 571); so that the new system had begun in session 1800-1. We may, therefore, conclude that Bell was lecturing in 1799, and that he had retired before Session 1800-1. Charles had assisted him for several years, and how far he may have given over to him, during the last few years, the more anatomical part of the course, cannot now be determined.

devoted himself to practice, in which he was already extensively engaged, and to farther authorship, especially in the preparation of his "Principles of Surgery," an undying book. He was altogether for about thirty years in surgical practice, and was the leading operating and consulting surgeon of his time in Edinburgh. His reputation attracted patients from all parts of Scotland and England, and from the Continent.[1] It is beyond my limits to follow John Bell as a surgeon, but I may say, shortly, that he was the reformer of Surgery in Edinburgh, or rather the father of it. He was not only a bold and dexterous operator, but combined all the qualities, natural and acquired, of a great surgeon to an extraordinary degree. He was original and fearless, and a thorough anatomist; he had intellect, nerve, and also language—was master alike of head, hand, and tongue or pen; and he was laborious as well as brilliant.

The following is a list of the works published by John Bell:—

1793–1802. The Anatomy of the Human Body, vol. i., 1793; vol. ii., 1797; vol. iii., 1802. Subsequent editions by Charles Bell.

1794. Engravings of the Bones, Muscles, and Joints, illustrating vol. i. of the Anatomy of the Human Body; drawn and engraved by himself.

1795. On the Nature and Cure of Wounds.

1800. Answer for the Junior Members of the Royal College of Surgeons to the Memorial of Dr James Gregory, to the Managers of the Royal Infirmary.

1801–8. Principles of Surgery, in 3 vols.

1810. Letters on Professional Character and Manners; on the Education of a Surgeon, and the Duties and Qualifications of a Physician. Addressed to James Gregory, M.D.

Observations on Italy, Edin. 1825—published after his death.

The last professional work he wrote was to have been entitled "The Consulting Surgeon," in 3 vols. It was founded on cases which had come under his notice, gave descriptions of the healthy and morbid anatomy of the parts affected, and was illustrated by numerous engravings. Dr Charles Bell informs me that most of the manuscript and some of the drawings for this intended work are still preserved, and in his possession. His Infirmary case-books are also preserved, and contain many drawings by himself.

[1] I am indebted for the following to his nephew, Dr Charles Bell, of Edinburgh: Although kind and liberal in his attendance on those who could not afford to remunerate him, John Bell did not hesitate to show his dissatisfaction with meanness on the part of those who could well afford to do so. On one occasion he was attending a wealthy Lanarkshire laird, and when he was taking his leave, the gentleman put a cheque for £50 in his hand. On reaching the outer door, he found the butler, and addressing him said, "You have had considerable trouble opening the door to me, there is a trifle for you!" The cheque was taken to the master, the hint was understood, and in due time a cheque for £150 was enclosed.

In 1816 John Bell visited the Continent. In London, Paris, and Italy, he was received with the highest honour by his professional brethren; and many of the English, who were abroad in great numbers after the peace of 1815, consulted him, so that practice followed him. His health continued to decline, and he died at Rome, on 15th April 1820, in his 57th year.

Sir Charles Bell.

Charles Bell was trained to anatomy and surgery by his brother John, who was eleven years his senior.[1] His professional

[1] Charles Bell was the youngest of four very talented brothers. Their grandfather, the Rev. John Bell, was minister of the parish of Gladsmuir, East Lothian, and died at the age of 32. Their father, the Rev. William Bell, was for many years the Episcopalian clergyman at Doune, Perthshire, and died in 1779. Like his father, he was a learned man. Their mother was an able and accomplished woman, educated under the care of her maternal grandfather Bishop White. The sons owed much to her training, besides the talent which they inherited. There were eight children, of whom two died in infancy. The eldest son Robert, advocate, became Professor of Conveyancing to the Society of Writers to the Signet, and was author of the Scotch Law Dictionary, and several other works on the law of Scotland. He was an excellent classical scholar and mathematician, and had great taste and execution as an artist. Lord Cockburn (Memorials of his Time, p. 165) gives an account of the indignation and opposition which Robert encountered when he first ventured to introduce independence in reporting the proceedings and decisions in the Court of Session: Lord Eskgrove's objection was, "the fellow taks doon ma' very words." He died in 1816. As the elder brother, he guided the education of the others. The second, John, was 16 years of age when the father died. The third, George Joseph, advocate, was Professor of the Law of Scotland in the University of Edinburgh, and author of several well-known legal treatises—a very distinguished man. He died in 1843. He was four years Charles' senior, and his intimate and sympathizing friend through life. Charles, born 1774, was but five years of age when the father died.

A good account of the lives and labours of the Bells would form an interesting volume. The short notice of Sir Charles Bell, in Knight's English Cyclopædia, Biog. vol. i., 1856, is well written, as far as it goes. The Quarterly Review, of May 1843, contains an able and valuable article (with some inaccuracies) on Sir Charles Bell and his discoveries, from the pen of a professional friend in London who was well qualified for the task. The extracts which it contains from his letters, especially those to his brother George Joseph, and from his diary, are very interesting, and give some insight into the character of his mind. My extracts, when not otherwise

career was begun in Edinburgh, continued in London, and concluded in Edinburgh. He commenced very early to assist in teaching his brother John's anatomical class. It is said that he "lectured to some hundred pupils on that science, while comparatively a boy," and that he became "associated with his brother in teaching, the latter taking the surgical, the former the anatomical department."[1] These are general statements, which may be correct enough, but the authority and dates are not given. He entered this College, as a Fellow, on 1st August 1799, previous to which he would not be entitled to teach a class of his own. Being now twenty-five years of age, he may well enough have been engaged in assisting his brother for five years. Whether John still gave part of the course in session 1799-1800, is uncertain. After this, at any rate, Charles conducted the school himself, till 1804, when he went to London. While thus engaged in teaching in Edinburgh, he published the following works :—

1798-1803. System of Dissections, 3 vols.
1801. Engravings of the Arteries.
1801. Engravings of the Nerves.
1802. Engravings of the Brain.

The greater part of his work on the Anatomy of Expression was also composed before he left Edinburgh. We have no information as to the method in which he conducted his school in Edinburgh, and no class lists remain to show the attendance, all the lists which can be found, I learn by the kindness of Mr Shaw, refer to Windmill Street. But in one of his letters from London, in 1813, he refers to the time "when I thought all was going on well in Edinburgh—when you recollect my class was ninety." With seven hundred students of medicine in Edinburgh at this time, and Monro (*secundus*) with well on to four hundred in his class, one is rather surprised to learn that Charles Bell—after some years teaching with his brother, and five years by himself, and some years after publishing important anatomical works—had not more than ninety pupils.

stated, are from this source. M. Pichot has written a book on Charles Bell (Sir C. Bell, Histoire de sa Vie et de ses Travaux : Paris, 1858), but without having had much information regarding him. It is a specimen of book-making. Mr Alexander Shaw, of London, brother-in-law to Sir Charles, published in 1839, a "Narrative of the Discoveries of Sir Charles Bell in the Nervous System."

[1] Knight, pp. 627 and 625.

When he went to London, in the end of 1804, he was thirty years of age. The reasons which induced him to take this important step are not distinctly given. It is hinted that the prejudice of his brother John's numerous enemies stood in his way, and that he was desirous of a wider field. It may be added that the Infirmary was now, and probably would have been for long, virtually closed against him. The chair of Anatomy had been filled up for another lifetime by the appointment of the third Monro, who was just about his own age. Two chairs of Surgery had just been instituted, but neither was for John or Charles Bell.[1] On the other hand, the example of the career of John Hunter, who had died while Bell was a student, would be sure to have great influence on a mind like his. Too sensitive a man to engage in strife, conscious of ability, and with high aspirations, we need not wonder that, so placed, Charles Bell was both ambitious to go and glad to leave.

My limits will allow me to give but a general notice of the London part of Bell's career. It was long and eventful, extending over thirty-two years, and may be divided into three parts, his connexion with the Windmill Street School corresponding with the second.

His first seven years in London (1804–1811) was a period of comparative obscurity and struggle with difficulties. He found himself in London with a light purse, without almost a single acquaintance, and with very few introductions.

"I could see that much could be done—but where to begin? Where find a resting-place? How show my capacity of teaching or illustrating my profession? These days of misery greatly tended to fortify me, so that nothing afterwards could come amiss, or bring me to a condition of suffering equal to what I then endured. A little romance tinctured the whole. . . . There was scarcely a street or a house in which my imagination did not lead me to think of the probability of finding a home at some future period. In short, I was as romantic as any young man could be, though the prevailing cast of my mind was to gain celebrity and independence by science, and perhaps this was the most extravagant fancy of all."

Finding no opening as lecturer at any of the schools, he took, in

[1] The Chair of Clinical Surgery was instituted in 1803, and given to Mr James Russell. The Chair of Surgery, now being constituted by the College of Surgeons, was to be given to Dr John Thomson, the eminent pathologist, who had given lectures on Surgery for three years. He was appointed to it on 5th October 1804.

1807, a cheap old house in Leicester Street, formerly tenanted by Speaker Onslow, and resolved to begin as a teacher there. Finding the ruinous condition of the old house, he wrote, "I do not know that at any time I was more depressed than when I found the sort of house I possessed." Here, however, he taught and resided till his removal to Windmill Street. He began with three pupils, "and it was many years before he numbered forty." "It was a reverse," he wrote, "to come down to three and six." He was fond of saying, afterwards, that no man would excel as a lecturer who did not begin with six. It was in the loneliness of this old house that the work which made his reputation with posterity was done, although his views did not attract notice for ten years afterwards. Besides working at the nervous system, he published during this period the following treatises:—

1806. The Anatomy of Expression in Painting.
1807–1809. System of Operative Surgery. 2 vols.
1810. On Diseases of the Urethra.

The work on the Anatomy of Expression brought him reputation, but the sale was not large, and it did not secure him the Anatomical Chair in the Academy. His name had meanwhile made him known to many, and he was now on terms of intimacy with the leading surgeons. Abernethy was ten years, Astley Cooper six years, his senior. Of Abernethy he says, "When I first came to London I was a great deal with him; and many a moonlight night have we wandered over half London, when Abernethy had no other intention than of bidding me good night at his own door."

During the next fifteen years (1811–1826) Bell occupied a prominent position among the teachers and surgeons of London, as teacher in the Hunterian School of Anatomy in Windmill Street; and as surgeon to the Middlesex Hospital, to which he was elected in 1814. Although the school in Windmill Street had been the school of William Hunter, and that in which Hewson, Cruickshank, Baillie, and James Wilson had taught, and had, therefore, a name, it was merely a private or adventure school, depending entirely on the teacher. Wilson had, since 1800, been the sole proprietor and principal teacher in the school, and was acknowledged by all to be the *facile princeps* of London teachers of anatomy. On account of increasing practice as a surgeon, Wilson had offered the school (building, museum, succession, and dwelling-house) for £7000, to young Brodie, who had assisted him for several years with the ana-

tomical course, and had for three years given also a course of surgery, by the persuasion and with the assistance of Wilson.[1] Brodie mentions[2] that he had no money at his disposal to meet the purchase, and kept by his separate course of surgery. He appears to have had no enthusiasm for anatomy. What the rest of the arrangement between Bell and Wilson was we are not informed, but Bell gave £2000, which was "all my money to the last penny," and, as he mentions, eighteenpence more. Brodie says[3] that the anatomical lectures were then given jointly by Bell and Wilson, Bell taking "much the larger share of them," and that—"A few years afterwards, Mr Wilson having retired altogether, the school became the sole property of Sir Charles Bell, who however was assisted in teaching surgery by his brother-in-law Mr John Shaw." In 1813, his second year in the Hunterian School, he writes to his brother,—"I am again at 90, but I shall not rest till I have 150." I learn from Mr Alexander Shaw, that in his time at the Windmill Street School—beginning 1822—Bell "lectured for two hours daily on anatomy, physiology, pathology, and surgery, according to the advertisement and common custom in the schools of London, and on three evenings in the week he lectured on surgery specially." His appointment to the Middlesex Hospital, three years after he obtained the Hunterian School, helped him greatly as a practical surgeon, and his clinical teaching there brought pupils and financial prosperity to the hospital.

The enumeration of his publications during this period will give some idea of the enormous amount of work he went through, bearing in mind that he was at the same time conducting a school of anatomy and surgery, and discharging the duties of Hospital Surgeon.

[1] See Sir Benjamin Brodie's Autobiography, written in 1855; and Letter by Sir Benjamin to Dr Craigie in the Appendix to the Life of Cullen, vol. ii., regarding the Windmill Street School. If Brodie is correct, it was in the spring of 1812, not in 1811, that Bell obtained the Hunterian School, but some of the dates given by Brodie, writing apparently from memory, are irreconcilable. In the letter (p. 740), Brodie says, I "continued to deliver my lectures in the same theatre for two or three years longer;" while in the Autobiography (p. 154), he says that, on retiring from the anatomical lectures, "I then engaged a house in Great Windmill Street, in which I constructed a theatre for my lectures." Brodie was nine years younger than Bell.

[2] Autobiography, p. 104.

[3] Letter in Life of Cullen.

1813. Engravings of Specimens of Morbid Parts.
1814. On Gunshot Wounds.
1816. Surgical Observations, or Quarterly Report of Cases, vol. 1st.
1816. Engravings of the Nerves, 2d edition.
1818. Surgical Observations, vol. 2d.
1819. On the Forces which circulate the Blood.
1821. On the Nervous System, in the Philosophical Transactions. First paper printed on this subject in 1810–11.
1821. Illustrations of the Great Operations of Surgery.
1822. Treatise on the Diseases of the Urethra, Vesica Urinaria, Prostate, and Rectum. Appendix to the same in 1827.
1824. Observations on Injuries of the Spine, and of the Thigh Bone.
1826. New Edition of John Bell's Principles of Surgery. 4 vols.

Bell appears to have felt the necessity of lessening the great labour and absorption of time implied in teaching such a school. The resolution of his brother-in-law, Mr John Shaw, early in 1824, to withdraw from being joint-lecturer with him, with the view of devoting himself more to the practice of surgery, probably helped to render Bell desirous of being more or less quit of the arduous labours of the Windmill Street School. In November 1824 he had resolved to dispose of the greater part of his extensive museum, and he did so in 1825 to the Edinburgh College of Surgeons. 1825–6 was the last session during which he and Mr John Shaw conducted the Windmill Street School. In the summer of 1826 he disposed of the school, and the remaining part of the museum, to Messrs Herbert Mayo and Cæsar Hawkins, Bell arranging still to deliver some of the lectures for a few years. An inducement to resume systematic teaching in a less laborious form now came before him in the offer of the Chair of Physiology in University College (or, as it was at first called, the University of London), which was about to be established. He accepted the chair, and delivered the introductory lecture in October 1828; but the arrangements made, notwithstanding promises held out, were so unsatisfactory to him, so far from coming up to his exalted notions of a teacher, that, within a few days of the opening of the new institution, he sent in his resignation.[1]

[1] The writer in the Quarterly Review is in error in giving 1827 as the date at which Bell began to think of relinquishing his work in the Windmill Street School, and in appearing to assign the institution of University College as the reason. The facts are as I have stated in the text. The records of this College show that Bell offered to dispose of the greater part of his museum on 29th Nov. 1824, for £3000; that, on 5th March 1825, by a majority of 35 to

During the remaining ten years of his London career, Bell did not teach, except that he continued to give clinical lectures to those pupils who remained at the Middlesex Hospital. "But," he says, "my hospital, which at the time you knew me enabled me to divide with my colleagues £1200, was lost by the withdrawing of the pupils to the new pretence of an hospital." But his reputation both in science and as a surgeon was now great, and he occupied

14, the College agreed to authorize the purchase; that, on 22d July, the purchase was completed, Dr Knox to proceed to London to receive the preparations; and that the museum arrived in Edinburgh in the autumn of the same year (1825). Even in 1826, on parting with the Windmill Street School, he engaged to pay back £400 if he afterwards taught in any rival school of Anatomy. The foundation stone of University College was laid in May 1827, and Bell's accepting the chair of Physiology cost him the £400. Messrs Mayo and Hawkins went on for some years with the Windmill Street School. King's College was founded in 1830, but it was two or three years afterwards until the building admitted of anatomy being taught in it. Mayo then "transferred his lectures to this new institution, of which he was the first anatomical professor; and thus the school of anatomy, founded by William Hunter, came to a conclusion." (Sir B. Brodie, Letter in op. cit., p. 741.)

The Museum purchased by this College from Bell was partly formed by James Wilson, who, after the removal of William Hunter's museum to Glasgow, had worked hard to form a new museum in Windmill Street. It was chiefly a collection of pure anatomy. The part formed by Wilson is still distinguishable by means of a separate manuscript catalogue. The Bell part of the museum was begun in Edinburgh by John Bell, and increased by Charles before he removed it to London. It then contained many, probably most, of the numerous specimens of distortion. In London, Bell worked assiduously, with the assistance of Mr Shaw, to enlarge the united museum ("Description of the Anatomical Museum of the School of Great Windmill Street," London, 1819). In offering it to this College in 1824, he retained a number, probably about a third, of the preparations of natural structure, sufficient to serve the purposes of a class. "I shall take out of the collection certain preparations of natural structure, and the remainder, forming a complete set for the illustration of anatomy, and the whole of the morbid preparations, I offer to the College of Surgeons for three thousand pounds." The collection is especially rich in surgical pathology, and the whole Bell and Wilson museum forms a collection second only to the museum formed by John Hunter. £15,000 was the sum given by government for John Hunter's museum, after his death. It was then given over to the keeping of the London College of Surgeons. Besides the Bell and Wilson, and the Barclay, collections, which form the chief part of the museum of the Edinburgh College, it contains many preparations presented by the Fellows of the College. The formation of a museum by the Edinburgh College was suggested by Dr John Thomson, who contributed towards it a collection which he had formed, with the assistance of his pupil Mr James Wardrop. (Life of Dr Thomson, p. 28, appended to Life of Cullen, vol. ii.)

himself in scientific writing and in practice. During this period the following were his publications:—

1828–9. Animal Mechanics. Published by the Society for the Diffusion of Useful Knowledge.[1]

1829. Seventh Edition of John and Charles Bell's Anatomy and Physiology. 3 vols.

1830. The Nervous System of the Human Body.

1833. Bridgewater Treatise—On the Hand.

1835. Illustrations of Paley's Natural Theology. In conjunction with Lord Brougham.

Some of his Clinical Lectures delivered at the Middlesex Hospital were published in the Medical Gazette of this period.

The chair of Surgery in the University of Edinburgh was offered to Bell in 1836. After much doubt he accepted it. "London," he said, "is a place to live in but not to die in." He had always wished for a college life, and wrote at this time—"there is but one place where I can fulfil the object of my scientific labour, and that is in Edinburgh." He lived for five years after his return to Edinburgh. During this time, besides discharging the duties of the surgical chair, and of his practice, his publications were—

1838. Institutes of Surgery, arranged in the order of lectures delivered in the University of Edinburgh. 2 vols.

1841. Practical Essays. 2 vols.

1841. Letters to the Members of Parliament for the City of Edinburgh, on two Bills before Parliament, for Improving the Medical Profession.

A new Edition of his Anatomy of Expression, for the purpose of finishing which he visited Rome.

He still "meditated a splendid work on the Nervous System," but diminished income retarded this; and death (from *angina pectoris*, from which he had suffered a good deal) overtook him sud-

[1] Founded on the lectures he had delivered as Professor of Anatomy and Surgery to the Royal College of Surgeons, when elected to that temporary office in 1824. The audience at these lectures was composed of seniors in the profession, students from the various medical schools, and others interested in science. Bell felt anxious, almost nervous, in coming before such an audience, especially one day when he saw before him "the capacious white head and cold impassable look of that sagacious old man Cline. But the success of the course was great—the most learned of the audience were the most pleased." (Quart. Rev., p. 222.) "The doors were besieged for an hour before he lectured, and when opened, the young men mounted on the heads and shoulders of the crowd, and were so carried along the passages to their seats." (Letter from Mr A. Shaw.)

denly when on a visit near Worcester, on 27th April 1842, at the age of 68.

In estimating the merit and reputation of Charles Bell, we must bear in mind not merely what he achieved, but his early and long struggle with difficulties, and that he stood alone. His reputation as a physiologist has now thrown his reputation as a surgeon into the shade. Although, in a sense, he disliked practice, as interfering with his scientific pursuits, it would be wrong to say that he did not like surgery, in which he was entitled to take, and took, a high place, both as a scientific and practical surgeon. His numerous surgical works show how much he worked at surgery both as a careful observer and original thinker. He was no mere book-maker. His operations were anxiously considered beforehand. "I must do an operation to-morrow, which makes me to-day quite miserable." "His style of operating was also universally acknowledged to be most dexterous. The same delicate hand which guided his pencil and his etching-point never failed him in the use of the scalpel."[1] His contributions to Military Surgery were considerable. He went to reside at Haslar Hospital, in 1809, on the return of the wounded from Corunna, and went to see and help at Brussels after Waterloo, a visit of which he has left a graphic account in his journal. As an anatomist his reputation rests on thirty years' teaching, and on his anatomical writings and engravings. The latter, with his "Anatomy of Expression in Painting," also established his reputation as an artist. His power as an artist, both in sketching and in colouring, has probably never been equalled in the medical schools.[2] As a lecturer, his style was "thoughtful and

[1] Quart. Rev., p. 204. I quote this article on this point, as it was written by one well able to judge.

[2] His natural talent for drawing was early exhibited. When a boy, his brother John made a clever criticism on one of his drawings, which he thus records, "I had drawn with great care a Venus, in the smoothest and softest manner, when, on returning to my work, I found he had with a touch of his pencil propped her very indecently with a pole stuck against the ground on that side to which she unfortunately leaned." (Loc. cit., p. 199.) Some of his paintings of gunshot wounds and of dissections may be seen in the Museum of the Edinburgh College of Surgeons. In the Military School at Netley were lately placed the book containing the sketches which he made of cases at Waterloo, and the larger class-drawings which he made from the original sketches. Another series of his drawings was lately placed in the library of the London College of Surgeons (Medical Times and Gazette, February 17, 1866, p. 179.)

eminently suggestive, forcing the mind to work out and finish the sketches which he presented. . . . His was the eloquence of matter rather than of words—thinking aloud rather than framing sentences." "To the last moment Bell was a conscientious teacher; he never gave a single lecture, even to a limited class, without much preparation."[1]

It is, however, mainly as a physiological discoverer that Charles Bell's name will go down to posterity. In December 1807 he wrote, "My new Anatomy of the Brain is a thing that occupies my brain almost exclusively. I hinted to you formerly that I was *burning*, or on the eve of a grand discovery." In 1810 he sent to his brother the "Idea of a New Anatomy of the Brain," and had it printed for distribution in 1811, but complained that his views attracted no notice, till after repeating them in a paper read before the Royal Society in 1821, he suddenly found himself famous, and raised especially on the Continent to even a higher position as a discoverer than Harvey. Harvey's reputation has had comparatively the advantage arising from the essential completeness of his discovery, and thus the discovery and his name are inseparable. Bell's first discoveries, on the other hand, became the foundation for farther discoveries in the same direction, not separated from his by distinct demarcation. To appreciate the merit and the value of what he proved, we must try to imagine ourselves ignorant not only of all we know of the functions of the various cerebro-spinal nerves, but even of the fact that there are distinct nerves for motion and for sensation, and think of the utter confusion which the nervous system must have then presented. Bell's discoveries were not the result merely of some fortunate stumble, or the flash of a happy idea, but of much reflection, at last confirmed by experiment. From at least 1807, his mind had been full of it, and he worked on with the feeling that he was on the track of a great discovery. One can hardly help following Bell in imagination to London, poor and solitary, but inspired with a noble ambition; working on alone in the old ruinous house, sometimes allured by the light of genius, sometimes driven by necessity; till at last, putting his views to the test of experiment on the living animal, and finding them to be correct, he stood in the first presence of a great discovery and felt that it was his.

It must be granted that Charles Bell was not rewarded as he

[1] Loc. cit., pp. 203, 221.

deserved. His brethren in London were not to blame for this, for they gave him, in 1824, all that was in their power to give, the temporary appointment of Professor of Anatomy and Surgery to the College of Surgeons; nor was Edinburgh to blame for it, for the patrons of the University offered him the only suitable chair which had become vacant since he had made a name, though it brought him only four hundred pounds a-year. The only appointment which was denied him, and that on three occasions, one of them in 1824, was that of Professor of Anatomy to the Royal Academy in London, a position for which his claims were beyond all question unrivalled. His income in London fluctuated between £1400 and £2400 a-year, not a great income for a famous surgeon in London, but it might have been much larger had he not chosen to give much of his time to science. It is not meant that his life was one of disappointment. Bell's ambition sprung from consciousness of power, genius, and the love of science, not from the desire for wealth; the sciences which he taught and cultivated—anatomy, physiology, and surgery—then presented, to him visibly, much untrodden ground; and, to those with whom it is voluntary, constant work, day by day and far into the night, is an intellectual pleasure. Much more with Bell who was drawn on by the belief that he had got the clue to a great discovery. In his first ten years in Edinburgh, besides these incitements, he had fair success. At first in London, his anxieties were lightened by high hopes, and in the Hunterian School and Middlesex Hospital, he was both prominent and successful. There, and after he ceased to lecture, he enjoyed fame and honours at home and abroad. He could not but feel this, when men like Cuvier, Larrey, Tiedemann, and Scarpa treated him with honour; and when he was spoken of on the Continent as greater than Harvey. One day Roux dismissed his class without a lecture, saying, "C'est assez, Messieurs, vous avez vu Charles Bell." He was knighted in 1830, along with Herschell, Ivory, Leslie, and Brewster, on the accession of William IV. "Strangers from all parts of the world consulted him, and offered him large fees for a few visits; and had he chosen to remain in London, and mastered his ruling passion for the pursuit of science, he most certainly might have thrown aside his wants and his anxieties; but that passion was his life, and only with life did it perish."

His acceptance of the Edinburgh chair was a mistake. He had

always longed for a college life, with position and leisure for scientific pursuits. The mistake now committed was in overlooking the fact that it was a practical not a scientific chair to which he was going, and that while he broke up a good position in London, the growth of many years, he had been thirty-two years absent from Edinburgh, and was too far advanced in life to begin again. "I seemed to walk in a city of tombs." Great disappointment followed. Neither his class nor his practice yielded the expected income. Although he was still the same careful and successful teacher, the unhappy state of the anatomical class at this time prevented the other medical classes in the University from being numerously attended—"There are here six lecturers on surgery"—"my class will not bring me £400. I stand well comparatively, but that is poor comfort, since it shows I have no mass to draw upon."—"I had during my whole life desired a college life. I thought I had here obtained a situation where I could constantly pursue science, and meditated a splendid work on the nervous system." For this he had left London, with a position in which he could have become wealthy had he but given up science. His services ought to have been secured to science by a pension from the state. His discoveries, viewed not only as additions to science, but as at once throwing new light on disease, and adding greatly to our power to relieve suffering, more than entitled him to such recognition; and it is short-sighted policy in a nation not thus to secure to science the services of men who have proved their ability to add to our knowledge and power. It was Bell's misfortune that no great anatomical position which would have made him independent of practice was within his reach, for that would have been his right place. Compare his career with that of the second Monro—the latter occupying a ready-made and splendid position from his boyhood, and yet Bell notwithstanding all his difficulties achieved more than Monro. Had Charles Bell, instead of the third Monro, been professor of anatomy, we may imagine, great as it was, how much greater his career would have been, how much more he would have done for science, and how much additional renown he would have brought to the Edinburgh school. As it is, Charles Bell's name must be placed in the front rank among those who have contributed to the progress of science, and to the relief of human suffering.

Barclay.

Among the former Anatomists of Edinburgh, there is no name that I have been accustomed to hear so frequently or with so much respect as that of Dr Barclay. His period as a teacher was from 1797 to 1825, in all twenty-seven years, but, having first studied for the church, he was late in beginning to teach anatomy.

He was the son of a small farmer in Perthshire, said to have been a man of great natural shrewdness and vivacity. His education was that of the Scotch parish school, under a good Latin scholar, followed by five years at the University of St Andrews, as an arts and divinity student, where he held one of those bursaries —gained by competition at which he took the highest place— which have enabled so many deserving young men in Scotland to obtain a university education. At college he was industrious, ardent, and distinguished not only for his Greek, Mathematics, and Hebrew, but already for that candour, good humour, and kindliness which he displayed through life.

Having taken licence as a preacher in the Church of Scotland, Barclay spent about the next ten years of his life in the capacity of family tutor, in Perthshire—first at Loch Dochart, and then near Dunblane—also preaching occasionally. It may be taken as proof that, with all his enthusiasm, he had no ambition, that during all this time he expressed no discontent. He taught the children, studied, joined in the round of country life, and showed the bent of his mind by engaging in the recreation of natural history.[1]

His change to medicine appears to have been determined accidentally. We are not informed whether the church had been his own choice in boyhood, or that of his parents, but he was in no way deterred from it by the fate of his able and impetuous uncle the Rev. John Barclay, A.M.; who, having been driven from the church by the jealousy and narrowness of his brethren, was at this time the active head of the Barclayan or Berean Churches, which he had

[1] Dr John Campbell, then one of his pupils, informs me in evidence of Barclay's early tendency to anatomy, that, although he was a great favourite with every one, and a most pleasant companion, he was not held in the same affection by the dogs of the place, who exhibited a marked antipathy to him; an that this was attributed to their having seen him engaged in dissecting a dog.

planted in many places in Scotland.[1] Nor had young Barclay any quarrel with the church, or with his brethren in it, either now or afterwards.[2] In his twenty-ninth year (1789-90), being sent to Edinburgh in charge of the two sons of Sir James Campbell, in whose family he was tutor, he attended the medical classes, especially anatomy, and was now in a position to feel the kindling influences of science and city life. He was gradually drawn on to give his chief attention to medicine, though still occasionally preaching for his brethren in the neighbourhood; and in 1796, seven years after he had come to Edinburgh, he took his degree as Doctor of Medicine at the University. His thesis, *De Anima, seu Principio Vitali*, was dedicated, we read with some surprise, both to Dr Gregory and to Mr John Bell.

He immediately prepared for teaching anatomy.[3] Besides

[1] An interesting account of the career of this able and excellent man is given, by a contemporary, in Chambers' Biog. Dict. of Eminent Scotsmen (vol. i. p. 127). The duty and wisdom of toleration had not then begun to be understood in the Church of Scotland. It was four years after the uncle had been driven out, that Barclay went (in November 1776) to the University with the view of studying for the Church. It may have been the discussions which he must have heard, at home and at college, regarding his uncle's views and publications, which led young Barclay, before he left college, to write what he termed "A History of all Religions," which, however, he did not publish. He had destroyed the manuscript, as it was not found among his papers.

[2] After he had begun to teach anatomy, he used to sit as a member of the General Assembly of the Church. His extensive acquaintance with the clergy is said to have helped to bring him pupils, at least in his earlier years, when he required it. On only one occasion did his theological studies bring him into danger. He had a trial exercise to read at the Divinity Hall, in which he required to criticise the words of the original. "He proposed to read it to his uncle before he delivered it, and when he was in the act of doing so, his respected relative objected to a criticism which he had introduced, and endeavoured to show that it was contrary to several passages in the writings of the Apostle Paul. The doctor had prepared the exercise with great care, and had quoted the authority of Xenophon in regard to the meaning of the word. The old man got into a violent passion at his nephew's obstinacy, and seizing a huge folio that lay on the table hurled it at the recusant's head, which it fortunately missed. Barclay, who really had a great esteem for his uncle, related the anecdote to a clergyman a few days after it happened, and laughed very heartily at it."—(Chambers, i. p. 137).

[3] In the Life of Dr Barclay by Sir George Ballingall, it is stated that he determined on this step immediately after his graduation "we believe somewhat suddenly," while in the notice of Barclay in Chambers' Biog. Dict. it is stated that he "had in view to deliver a course of anatomy for a considerable number

attending Monro's course, he had studied anatomy under John Bell, and became his assistant.[1] After spending some time in London prosecuting anatomy under Dr Marshall, an able teacher, he returned to Edinburgh, and began to lecture in 1797, a year after his graduation, and now in the thirty-seventh year of his age. He had brought with him some anatomical preparations, part dissected by himself, part purchased, part presented by Mr George Bell, afterwards an able surgeon in Edinburgh. With this small museum he commenced to lecture in a house in the High School Yards, adjoining Surgeons' Square, which the liberality of his friend Sir James Campbell enabled him to fit up. He commenced with great anxiety and diffidence, but by degrees acquired confidence, and the zealous friends who came to hear and encourage him were satisfied, before his introductory lectures were over, that he would succeed. These were small and modest beginnings.

of years." The two statements are not quite irreconcilable. The Life by Ballingall, his pupil and attached friend, is a fair account of the principal events of his private and professional life, but being written in 1827, a year after Dr Barclay's death, the author, unfortunately for us, had not thought it necessary to say much about Barclay in the aspects in which he is now of interest to us. The same remark applies to the well-written notice in Chambers' Biog. (1835), which is chiefly taken from the Life by Ballingall, but some additional facts are mentioned. A good life of Dr Barclay, giving an account of his system and school as an anatomical teacher, and illustrating his social life and character, by some one who was familiar with him in both capacities, would have been both valuable and entertaining. Many anecdotes associated with him are now lost. I am indebted to several senior medical friends for additional information of the kind I chiefly desired regarding Barclay, more especially to Dr John Campbell, brother-in-law to Dr Barclay, and to Mr Nasmyth, who was one of Dr Barclay's assistants.

[1] During part of this time Charles Bell was teaching with his brother John. There was no vacancy to induce Barclay to begin at this time, and we are left to suppose that he was induced to commence as teacher of anatomy, in the absence of any other prospect, by his liking for anatomy, and the prospect which the teaching of it reasonably afforded, from the great and rapidly increasing number of students in Edinburgh. There was also the example of Mr William Nelson, who lectured on chemistry. Nelson, educated in the Church of England, had become a Methodist, and going in to London to dispute with the Rev. John Barclay, ended by becoming his convert. He afterwards went to Edinburgh, in connexion with Mr Barclay's sect, where he practised as a surgeon and began to lecture on chemistry in 1790. He lectured twice a-day in winter, to two different sets of students, and also gave a summer course. He died in 1800. (Chambers' Biog., i. 134 and 139.)

That the attendance on his lectures was small during the earlier years will occasion no surprise when I state that his lectures during the first seven years (1797–8, 1803–4), were recognised by no licensing board; being a Fellow of neither college, his lectures could not qualify. No doubt, there were 600 to 700 students in Edinburgh, bound to attend only one course of anatomy; but that they did not resort to the yet unknown Barclay for the additional courses we need not wonder, when we recollect that John and then Charles Bell were teaching on one side of him and the second Monro on the other.[1] The increase of his class, notwithstanding, encouraged him to remove to a more suitable lecture-room. With this view he purchased the house in Surgeons' Square, so well known afterwards as Dr Barclay's lecture-room, where he continued to the end to teach.[2]

In the summer of 1804 two obstacles to the increase of Dr Barclay's class were removed. The departure of Charles Bell for London left the field open; and the College of Surgeons passed a resolution recognising Dr Barclay's lectures, thus giving the same privilege as if he had been a Fellow. This was on 19th June, and in a letter of acknowledgment, on 7th August,[3] he says, "It is the highest honour that has ever been conferred on me, and you may be assured I shall always remember it with the warmest sentiments of esteem and gratitude." The publication of his work on Anatomical Nomenclature, in the previous year, must have helped to procure him the confidence of the College.[4]

[1] Ballingall referring to his having heard Barclay say that the number of his pupils "was at first exceedingly scanty," speaks (Life, p. vi.) of "the second Monro, and his former master, Mr John Bell, being then in the blaze of their fame." This agrees with my conclusion that John Bell did not retire from teaching in 1796.

[2] It was originally built for a lecture-room by Dr Duncan, sen. Barclay purchased it from Dr Ramsay. Messrs Latta and Ramsay had made an unsuccessful attempt to teach anatomy. (Life, p. vi.; and Chambers, p. 139.) It was the three-story house, with arches and pillars, which stood between old Surgeons' Hall and the old hall of the Medical Society. The theatre was above, and was from time to time enlarged as his class increased.

[3] Surgeons' Records, 13th Sept. 1804.

[4] As Charles Bell had now resolved to leave for London (1803–4 was his last session as a teacher of anatomy in Edinburgh), Monro would have been left the only qualifying teacher of anatomy in Edinburgh, for the College as well as for the University, with some seven hundred students in the school,

His efficiency as a teacher, and his reputation as an author, being now established, and the serious obstacle to his success removed by the College, the attendance on Barclay's class rapidly increased. His class lists have probably not been preserved, at least my efforts to trace them have not been successful. It is known, however, that his lectures were now, for twenty years, very numerously attended, and I have reliable information that the number reached fully 300. The number of students of medicine in Edinburgh was very great during Barclay's time—At first from 600 to 700, it had, in 1810, reached 900;[1] and, with some fluctuations, continued at this high rate during the rest of Barclay's time (1825). It was not indeed till from five to fifteen years after his time that the number was considerably, and inevitably, reduced, as numerous other schools of medicine which now exist began to be established. This was a time of large classes. There was Monro with his 400, and Barclay getting on for his 300. Barclay was the only lecturer

had the College not now recognised Barclay's lectures. It was not till two years afterwards that he acquired the privilege in his own right, by becoming a Fellow of the College of Physicians. It was probably quite beyond Barclay's power, in these earlier years, to meet the heavy expense then attending entrance to the Fellowship of the College of Surgeons, especially to those who had not been apprentices, and were neither sons nor sons-in-law, of Fellows. He was elected an Honorary Fellow of the College of Surgeons on Nov. 12, 1821.

[1] These are the numbers on the matriculation list of the University, but, since probably about the beginning of the present century, there has been a variable number of students of medicine in Edinburgh not included in that list. During the war, which created, up to 1815, a great demand for surgeons in the Army and Navy,—for whom a surgeon's, or assistant-surgeon's, diploma from the College of Surgeons was then sufficient—there were probably a considerable number of students who did not seek the University degree. It is impossible to say how many were in this position, and as many of these students took part of their classes in the University, part of them are included in the University matriculation list. Since all the medical classes required for the diploma of the College of Surgeons could be obtained out of the University, there has been no means of determining the exact number of students in Edinburgh. The Register at the College of Surgeons is incomplete, and most of the names on it are also on the University list. The entries at the Infirmary may not contain the names of the junior students, or some of the others. The new system of registration gives only those who are beginning their studies. The returns to the Inspector of Anatomy give only the pupils engaged in practical anatomy. The University matriculation list, always the nearest approximation, has been especially so for the last twenty years, since the end of the period of the third Monro.

till 1808, when Gordon began, and taught, as we shall find, for ten years, with a class under 100. Barclay was, however, more than compensated for this by the retirement in the same year (1808) of the second Monro, after which the students largely resorted to the lecturers for their anatomical instruction. I understand that it was after this, and gradually, that Barclay reached his 300. It will give some idea of the facility, as well as the possibility, of forming a good extra-mural class of anatomy during the time of the third Monro, to mention that, in the year 1821–2 (for which we happen to have the numbers in each class given), while the number of students of medicine in the University was 802, the attendance on the Anatomy Class was only 200, the students taking only the one course of anatomy which the University regulations required.[1]

An important element in Dr Barclay's success was that he gave his whole time to anatomy—to teaching, research, and museum making. He was thus able not merely to appear in the lecture-room but to work constantly with his pupils. He was the first teacher of anatomy in Edinburgh who did so, the Monros and Bells having been also engaged in practice either as physicians or surgeons. It does not appear that Barclay ever looked forward to practice; if he did at first, the rapid growth of his class, after 1804, rendered it unnecessary.[2] But he was not unfrequently consulted by the surgeons in cases specially requiring anatomical knowledge.

He lectured twice a-day, at 11 A.M., and in the evening at 6. These were not courses of a different kind, but the evening lecture

[1] The numbers are given in a third Appendix to Craufurd's History of the University. The Anatomy class is usually more than twice the size of the other medical classes in the curriculum for the degree. These were, in that year, attended as follows: Materia Medica, 280. Institutes of Medicine, 181. Practice of Medicine, 275. Clinical Medicine, 141. Botany, 201. Chemistry (Hope), 497. The Greek and Latin classes were, respectively, 417 and 376, the number of students in the Faculty of Arts, in that year, being 871.

[2] His income from teaching in the best period was from £800 to £900 a-year. His fee was £4, 4s., but, of the 300 students, part would be second year, and some perpetual pupils. Besides his museum and a valuable library, he left between £7000 and £8000 at his death. It can only have been during the last twenty years (after 1804) that his class became remunerative. In 1811 he married the daughter of Sir James Campbell, but had no children. His house was on the north side of Argyle Square, where many of his pupils experienced his kindness and hospitality.

was a repetition of the morning one, simply for the reason that the class-room was unable to take in so large a class. The student got his ticket either for the morning or the evening lecture as he chose. The morning lecture was the most numerously attended. The evening lecture began some time after the commencement of the session as the class filled up. At the time his class was largest, he even repeated the lecture at twelve o'clock also, making three lectures a-day for him, though only one for the student. He adopted the systematic method — bones, joints, muscles, etc., separately—and went through the whole of anatomy in each course, his lectures also including surgery (the title of his course being, like Monro's, "Anatomy and Surgery") and physiology, blending them with anatomy; for, as will appear further on, attendance on courses of surgery and physiology, separate from anatomy, was not required by the College till after Barclay's time. At the end of his course he showed the surgical operations. Besides accomplishing all this in one course, in accordance with the system and science of the day, he found time to exhibit and quote from the books of the old anatomists, and for many humorous illustrations. When he came to the soft parts he always had a dissection to illustrate the lecture.[1]

Dr Barclay read his introductory lectures, but for his ordinary lectures did not use even notes. He even did not make notes of his lectures for private use, nor was he known to consult any book before going up to lecture, except Innes on the Muscles. In the lecture-room his language was unaffected and clear, his object being to give, on a philosophical plan, a useful course. "His

[1] One day at the beginning of the lecture, Barclay lifted the sheet which covered the subject, and laying it down again, began to make general remarks, with which, to the surprise of the class, he went on till the end of the hour. A pupil, going back after the class was dismissed, heard him reproving his assistant in animated terms. He had omitted to have ready a dissection for Barclay's lecture. The story illustrates pretty well Barclay's power of speaking to the general question on an emergency. This was long after he had become an experienced lecturer.

On one occasion the assistant, having been out at dinner, came to the dissecting room at ten o'clock at night to prepare the dissection for next day. Going to where the new subject lay, he began to pull off the sheet, which to his surprise was again pulled back. Candle in hand, alone, as he thought, in the dark room, he pulled again and again, and, to his horror, the sheet was each time pulled against him. It turned out to be only a dog which somehow had got into the premises.

distinguishing merits as a lecturer, were his rigid adherence to that order of demonstration which he had adopted as the most useful; his equal and unwearied attention to every department of the course; his copious and happy illustrations of every subject on which he had occasion to touch, and his anxiety to lay a solid foundation, by impressing upon his auditors a knowledge of all that is important, all that is certain, all that is useful in the science of anatomy; while, at the same time, he discouraged a taste for frivolous, vague, or useless speculations." [1] "He took great pains to resolve all the puzzles, so to speak, of anatomy. He was, for instance, most elaborate in showing the various duplicatures of the peritoneum. On the brain he always gave a lecture (generally on a Saturday) of four or five hours' duration. He contrived to weave in many jocularities, such as telling us that the Pes Hippocampi was called after the foot of an animal which had no foot. What he gave he gave well and intelligibly, notwithstanding a snivel in his utterance, the effect I believe of the habit of snuffing." [2] He was so occupied with his subject that he often disregarded the bell, lecturing on as the class dismissed, until he found himself without an audience. One of his telling illustrations of the necessity of anatomical knowledge used to be the mention of a veterinary surgeon having written on the diseases of the gall-bladder of the horse, unaware that the horse does not possess that organ. He was severe on the surgical anatomists of that day for their multiplication of fasciae, which he maintained could be manufactured by the knife. The, as it appeared to him, nearly exhausted state of anatomical science,

[1] Ballingall, Life, p. xiv.

[2] Letter to me from Dr Gairdner. Dr Barclay used to say that he had neither the sense of taste nor smell. He was a great lover of snuff, which he took freely during lecture, without caring first to wipe his fingers. On a handsome box presented by Cullen the anatomist, found in Dr Barclay's repositories, occurs the following inscription, kindly copied for me by the Rev. James Farquharson, Minister of Selkirk, into whose possession the box has passed:—

Q. F. F.^{2} S.
JOANNEM BARCLAY M.D.
Præceptorem suum,
quo nares ejus et corpus identidem suavissime recreentur,
hâcce Pyxide donavit
GULIELMUS CULLEN
Prid: Kal: Nov: A.S.H. 1825.

he illustrated by the comparison of the early anatomists and their successors to the preparers of the ground, the sowers, and the reapers; his predecessors to the gleaners; while he and his contemporaries were only the stubble geese.

Dissection was carried on in a room badly lighted from the side. The supply of subjects was partly from the neighbourhood, partly from London, but dissection was not yet compulsory, and, on account of the expense and other difficulties, not general.[1] At first, in the Edinburgh School, subjects were obtained in the neighbourhood, and at moderate expense; but the consequent alarm and the increase of the school rendering the supply deficient, they were obtained from London, though at considerable expense, and this diminished the supply in the London schools, and created dissensions between the men and the London teachers. This almost stopped the supply from London, and they were obtained from Liverpool and from Ireland. At one time, London, Edinburgh, and Glasgow were all supplied from Liverpool. When the number of students in Edinburgh was so great, it was impossible to obtain a supply from the neighbourhood, or, indeed, to obtain a sufficient supply at all. That Dr Barclay was unable to do without a supplementary supply from London there is no doubt, from the facts which have been mentioned to me by one who was present. He could obtain from London not only a subject, but the kind of subject which he wanted for his lectures at a particular time. The school at St Thomas' Hospital, London, had been very ill supplied for some months; the man assured the lecturer that he had been sending in a good supply, on which it was discovered that the porter of the school had been keeping them up and sending them off, at an advanced price, to Edinburgh. Such were the men on whom the anatomists were dependent.[2] On one occasion one of the Edinburgh men, on his

[1] Mr Nasmyth informs me that, in a class of 200 he has known not more than 30 who dissected.

[2] The following entries occur in a diary, for 1811, which one of the London "resurrectionists" kept. *Dec.* 28. "At 4 o'clock in the morning, got up with the whole party to Guy's and St Thomas's crib, got 6, took them to St Thomas's, and met at St Thomas's again, packed up 3 for Edinbro', took one over to Guy's." *Jan.* 15. "Went to St Thomas's, came back, packed up 2 large and 1 small for Edinbro. At home all night." *Thursday* 16. "The party met at the Hartichoak, settled the above, each man's share £8, 4s. 7½d." *Tuesday* 21. "Looked out. Jack and Butler drunk as before, hindered us from going out: at home."

way to Barclay's rooms with a subject, fell in Infirmary Street, broke his leg, was caught and tried, but got off. Latterly, when Aitkin became Demonstrator in Barclay's rooms, he managed the supply, going out for them with the aid of the assistants and the more adventurous pupils. Such were the difficulties and dangers attending anatomical study, before the Legislature saw, in 1830, that it was for the public interest to legalize dissection.[1]

Dr Barclay had always pursued Comparative as well as Human Anatomy, and during several of his latter years gave a special course of lectures on Comparative Anatomy in the summer session.[2] The course consisted of a daily lecture, and was mainly occupied with osteology, illustrated by the skeletons which he had collected. His Comparative Anatomy was philosophical as well as practical, and in advance of his time.[3] Professor Owen writes, "The extensive knowledge of Comparative Anatomy possessed by my revered preceptor in Anatomy, Dr Barclay, enabled him truly to interpret the parallelism of the bones of the fore-arm and the leg proper. He showed how the ulna and its homotype the fibula exhibited the same 'variety and unsteadiness of character, sometimes large, sometimes small, and sometimes merely a process' of the more constant

[1] When his class became large, Dr Barclay had a Demonstrator in the dissecting room, besides the assistants who dissected for the class and otherwise worked with him in the rooms. John Dickson was a well-known Demonstrator. Originally his servant boy, having found him reading a Latin book, Barclay had him educated and trained. Some of the minute dissections of the arteries in the Barclay museum were by Dickson. He entered the Navy as a surgeon, and became physician to the Bey of Tripoli. He died about ten years ago. Frederick Knox and John Aitkin were also Demonstrators in Barclay's school. After Barclay's death, John Aitkin lectured for a few years, to 1833-4, on Anatomy, at 4 Surgeons' Square, assisted in the dissecting room by his younger brother, Thomas, who also lectured on Physiology and on Materia Medica, where Dr Murray the chemist taught. John Aitkin was reckoned a good comparative anatomist, and, before he got into irregular habits, was a popular teacher.

[2] So far as I can ascertain, Barclay did not give demonstrations on Human Anatomy in the summer session; but at least when Aitkin became Demonstrator, dissections were conducted and demonstrations given by him, during the summer session.

[3] "It affords clear and ocular demonstration that all animals are constructed on the same general outline, and only varied as to class, order, genus, and species." (Barclay's Introductory Lecture to Comparative Anatomy, p. 165.)

bone of their respective segments."[1] It was proposed at this time to make a chair of Comparative Anatomy in the University for Dr Barclay. The proposal gave rise to much discussion, scientific, personal, and political, and was not carried out.[2] Dr Barclay also saw the importance of Veterinary science, and "to him the public is chiefly indebted for the establishment of the Veterinary School, so successfully conducted by his pupil Mr Dick."[3]

Dr Barclay published several valuable works, the fruit of much observation and thought. The following is a list of his publications, which, it will be observed, were commenced at the time he began to teach, and were continued to the last year of his life:—

[1] On the Nature of Limbs, p. 22, 1849. "M. Flourens had probably never seen Dr Barclay's 'Explanations of Mitchell's Plates of the Bones,' 4to, 1824, when he wrote (Annales des Sciences Naturelles, 1838, pp. 35, 37), 'Il a été plus difficile de rapporter individuellement chaque os d'un membre à chaque os de l'autre. Chose étrange, on ne sait pas encore s'il faut comparer ensemble l'*humerus* et le *femur* du même côté ou l'*humerus* d'un côté et le *femur* de l'autre; on ne sait pas quel est celui des deux os de l'*avant-bras*, le *radius* ou le *cubitus*, qu'il faut comparer à tel ou tel des deux os de la jambe, le *tibia* ou le *péroné*.' He supports his reproduction of Barclay's proposition regarding the serial homology of the bones of the fore-arm and leg by similar remarks drawn from Comparative Anatomy."—Owen, op. cit., p. 23.

[2] The students became interested in the discussion, and there were squibs and caricatures flying about. There is a caricature in one of Kay's Edinburgh Portraits (CLII.), entitled "The Craft in Danger—An uproar among the craftsmen at Ephesus opposing a new species of knowledge which they thought might interfere with the profits of their trade." The skeleton of the elephant, with Barclay perched on its neck, is approaching the University gate. He is resisted by Monro and Jameson. Monro is striking with a human thigh bone, and exclaiming, "Sirs, you know that by this craft we have our wealth." Jameson, sitting on a walrus, is striking with the tusk of a narwhal, and exclaiming, "Bar-Clay, I know it not, neither is it mentioned by the illustrious Werner." Gregory, behind, is pushing on the elephant, and exclaiming, "Go in friend, fear nothing." A figure, whom I do not recognise, exclaims, "I insist Bar-Clay shall be employed in the new building. It will strengthen and adorn the structure;" and Hope, pulling back with all his might a rope round the elephant's fore-legs (the other end attached by an anchor to a mass of "Strontian"), is exclaiming, as the rope breaks, "Hope is lost—the rope gives way, and muscular motion gains the day." Whatever may now be thought of the wit, it is evident that the artist had not gained admission to Dr Barclay's museum before sketching the elephant. I am indebted to Mr W. F. Watson for kindly sending me his copy of the caricature.

[3] Ballingall, p. 13.

1797. The Article "Physiology" in the Encyclopædia Britannica.
1803. A new Anatomical Nomenclature.
1808. The Muscular Motions of the Human Body.
1812. A Description of the Arteries of the Human Body.
1819. Explanatory References to a Series of Engravings representing the Bones of the Human Skeleton, with the skeletons of some of the Lower Animals. The Engravings by Edward Mitchell. Second Edition in 1824.
1822. An Inquiry into the Opinions, Ancient and Modern, concerning Life and Organization.
1825-6. Introductory Lectures—five in number, four to the study of Human Anatomy, one to Comparative Anatomy. Mostly printed before his death in 1826, and published in 1827, by Sir George Ballingall, M.D., with a Memoir of Dr Barclay's Life.

The large Museum which Dr Barclay left, contains specimens contributed by former pupils from many parts of the world, but the greater part of it was formed by his own design and industry, and at considerable expense. It was left to the keeping of the College of Surgeons on condition that it should be rendered useful, and that it should retain his name. It is now well displayed in the first room and gallery, as we enter, and is open to the students and to the public, like the rest of the museum of the College. Besides an abundant collection of the more ordinary specimens of human anatomy, there are many valuable vascular preparations. The skeletons of the larger animals—the elephant, boar, camel, ox, deer, horse (including the Arabian, the great cart horse, the pony, and the ass), bear, walrus, seal, dolphin, narwhal, and the ostrich—form the most striking part of the collection, but the shelves are full of specimens which the anatomist can appreciate. In the gallery are many fine specimens of skulls and teeth of various mammalia, and there are many interesting specimens of reptiles, wet and dry, some showing very well the osseous structure of the chelonia. When it is considered that it was made and collected by himself, over a period of about twenty-seven years, during which he was laboriously occupied in teaching and authorship, the museum is quite a monument to Barclay's enthusiasm and industry.[1]

[1] The contents of Dr Barclay's museum are perhaps better known to myself than to any one else. I have been much indebted to the opportunities of study which it afforded me. Many of my class drawings and notes of comparative osteology were made in it, and, by the permission of the College, I was allowed to teach in it when the specimens were too large to be removed to the theatre. The elephant was purchased, and the bones prepared, by Sir George Ballingall in 1813, and afterwards sent home to Dr Barclay. It was at first differently

Dr Barclay was throughout life a great student, though not much either of a late sitter or early riser. He was a very good-natured man, almost never angry, with a great fund of humour and anecdote, and his wit, unlike that of many, had nothing offensive to others in it. The late Dr Greville, who was intimate with him, used to say that he was the best companion in Edinburgh. He was, however, not without very decided opinions, which he could express strongly. As may be supposed, he was a great personal favourite with his students. In 1811, when he had taught for fourteen years, he heard of a subscription going on among his pupils for the purpose of presenting him with a piece of plate, and put a stop to it from reluctance to burden his pupils with any avoidable expense, receiving instead "a very spirited and well-written address." About eighteen months before his death, when his connexion with teaching was about to cease, he at last yielded to the kind wishes of his pupils, who resolved to subscribe for the purpose of procuring the bust, which now stands in his museum, and is reckoned an excellent one. In his prosperity Dr Barclay did not forget those who had been kind to him in his youth, and he was always ready to help on young men struggling with difficulties. "His liberality, indeed," says Sir George Ballingall, "to young men struggling with adverse fortune and straitened circumstances, was one of the most conspicuous traits in his character, and was thought by some to have been carried even to a fault. He gave young men gratuitous admission to his own lectures; and has even been known to furnish them with the means of feeing other teachers."[1]

put up and a drawing of it, by Dr Greville, appears in the series of engravings by Mitchell. The walrus presents some curious exceptions to the accuracy with which the skeletons are mounted. The enigma of three phalanges, besides the "metacarpal" and "metatarsal" bones, in the internal digits, is partly explained on finding that one of the three, in both of the fore-feet, is made of wood. The scapulæ are, or were, the very differently shaped scapulæ of a cetacean. Dr Barclay must have been away on one of his customary autumnal tours when his articulator indulged in these variations, which may afterwards have afforded scope for the doctor's wit. I once found a skeleton being put up partly from a bear partly from a seal. I sent to Greenland for the scapulæ of a walrus, and presented them to the College, in order that the walrus might have, if not its own shoulders, at least those of a walrus.

[1] His liberality in this respect was not unfrequently so much abused that he was obliged to check it. I have from Dr John Campbell a good illustration of this. Coming one day into the shop of Mr L—, a well-known bookseller of his day, he was addressed with "Come away, doctor, I was just wishing to see

Dr Barclay worked on with undiminished vigour till about three years before his death, when his friends, seeing that his health had begun to suffer, urged on him the propriety of relinquishing his evening course or of handing it over to an assistant. He did not take this advice till some time after the beginning of his last session (1824-25), when he formed an arrangement with Dr Robert Knox, then Conservator of the Museum of the College of Surgeons, who became his successor. Notwithstanding the advice of his friends, he appeared to give the introductory lecture of the next session. It was too evident that his memory had failed, and it was his last appearance in the lecture-room. He thus retired at the age of 65, after having taught regularly during twenty-seven years. During the winter session (1825-6) he prepared his introductory lectures for the press, and was engaged in writing the lives of Aristotle and Harvey, which he left incomplete. His strength becoming exhausted, accompanied by a paralytic attack which affected his speech, and paroxysmal attacks of dyspnœa, he died on 21st August 1826, aged 66.

In estimating the merit and reputation of Barclay, it must be borne in mind that over fifteen years of his available life had passed before the work of his life began, and that he stood on his own footing as a teacher, unconnected with institution or school of any kind. He was a peaceable, modest man, full of quiet humour, genial and kindly, with a decided genius for anatomy, at which he worked enthusiastically, thoughtfully, and laboriously. The man is seen in his two favourite authors, Aristotle and Harvey, whose lives he tried at the end to write—the old classic philosopher with a side for natural history, and the modern anatomist and physiologist with a turn for the philosophical. His works also illustrate his qualities

you; here is a young man from the country to whom I would like you to give a ticket to your lectures." "Very well, Mr L—," was the doctor's reply, "if you ask it I must just do it;" and he accordingly pulled out and filled up a ticket for the youth. "Now," he said, addressing Mr L—'s shopman, "Hand me down Fyfe's Anatomy, now Bell's Anatomy," and so on, until he made up a purchase equal to the value of his ticket (£4, 4s.). Then addressing the student, he said, "Here, my young friend, is Mr L—'s present to you." Mr L— protested, but in vain, and the youth departed with both books and ticket. The bookseller would take better care the next time before he asked the doctor to present his ticket. The story illustrates both his liberality and ready wit. Dr Barclay is not the only teacher who has found even wealthy persons very ready in this easy and not uncommon way of being kind at his expense.

and habits—his Anatomical Nomenclature, the classic; his Life and Organization, the speculative; his Muscular Motion, and Arteries, the laborious observer; while by the industry of his hands, in leisure hours, he was able to leave behind him the largest museum ever formed by any one medical teacher in Edinburgh. But the greatest of all his works, though after one generation the least traceable, was the faithful discharge of his duties as a teacher of large numbers of young men, over a long series of years; not only by the efficiency and high quality of his teaching, but by the no less important though silent influence of his example and character.

Gordon.

It is due only to the shortness of his career that the name of Dr John Gordon is less known than that of any of the anatomists already noticed. When death overtook him, ten years after he began to teach anatomy, he had already made a reputation as an anatomist, and was one of the best teachers, and most valuable men in the Edinburgh school. We may see from Gordon's career, which was finished at the age of 32, what Barclay lost by not having begun till his 37th year; and on the other hand, from Barclay's career, what Gordon's name would have been had he been spared to a long life. But Gordon has had one advantage over the other anatomists of Edinburgh—in that his life has been fully written,[1] perhaps even too tediously, although the Memoir, by his friend Daniel Ellis the botanist, is quite a small and a modest book compared with some of the biographies of our time.

Before he studied medicine, Gordon had all the advantages of education which the grammar school of Forres, his native place, and two years at the University of Edinburgh, could give. Nor did he want friends in Edinburgh, where his brother Robert was a Writer to the Signet, and where, above all, he was the apprentice and favourite pupil of Dr John Thomson. On taking his degree as Doctor of Medicine at the University, in 1805, feeling no desire to carry out the family plan that he should enter the medical service of the East India Company, he took Dr Thomson's advice to begin as a teacher of anatomy in Edinburgh. He spent three years in

[1] Memoir of the Life and Writings of John Gordon, M.D., F.R.S.E., late Lecturer on Anatomy and Physiology in Edinburgh. By Daniel Ellis, F.R.S.E. Edinburgh, 1823. Pp. 238, 12mo.

preparation, the first in London, in James Wilson's school of anatomy in Windmill Street. He also attended lectures on comparative anatomy by Dr Macartney, who afterwards removed to Dublin. The next two years he spent in Edinburgh, during each of which he gave some anatomical demonstrations to a small number, by way of experiment.

He became a Fellow of this College in October 1808, in his 22d year, three years after his graduation, and now commenced formally to teach anatomy. Although young, he was already master of his subject, both practically and from careful study of the great works of the continental anatomists. These he tested by his own observation of nature, so as to form for himself a complete system of anatomy and physiology in their most modern aspect. He was noted for the care which he bestowed in the preparation of his lectures, for the neatness of the dissections with which he illustrated them, and for the attention which he gave to minute structure. At first he taught anatomy and physiology together in the same course, lecturing once a-day, but after, I understand, the first two years, he gave a separate course of physiology, generally in winter in the evening, sometimes in summer. Gordon was a most accomplished lecturer. There is abundant evidence of this in the Memoir, and I learn from several who attended his lectures that there is no overestimate in this. Dr William Henderson of Aberdeen, a good judge, who was Gordon's apprentice during his first four years as a teacher, speaks of Gordon and his lectures in the highest terms. Dr Gairdner, who attended Gordon's lectures both on anatomy and physiology, writes to me, that he was "minute in such things as the internal ear, and in his descriptions of the kidney, liver, testis, and other organs. He never uttered a jest and never travelled from his subject even for an instant. His manner, appearance, style of language, his dissections, and his matter were all of them admirable. He was, in fact, or at least in my judgment, a model lecturer both on anatomy and physiology."

Gordon's class was good, but not so large as he deserved, probably never exceeding 100, Barclay's greater standing and name carrying the larger class. Gordon began eleven years after Barclay, and died six years before Barclay retired. There was considerable, but quite friendly, rivalry between them. Gordon lectured next door to Barclay, in No. 9 Surgeons' Square, the detached house at the west end of old Surgeons' Hall, to reach

which the pupils had to pass the door of Barclay's class-room. Professor Macdonald of St Andrews, who attended Gordon during several of his later years, informs me that Gordon's dissecting room, which was below the lecture room, was well supplied. He recollects at the commencement of his anatomical studies, the pupils who intended to enter to the practical class being asked to meet in another room, in which they found six subjects ready to be begun. It was understood that they had been obtained from London.

Gordon was the author of several important essays and works. The following is a list of his publications.

1808. On Dislocations of the Thigh Bone.
1812. The article "Dumb and Deaf" in the Edinburgh Encyclopædia,—in which he treats at considerable length the subject of Speech, physiologically considered.
1815. A System of Human Anatomy. Vol. I.
1817. Observations on the Structure of the Brain, comprising an Estimate of the Claims of Drs Gall and Spurzheim to Discovery in the Anatomy of that Organ.
1817. Outlines of Lectures on Human Physiology.
1818. Engravings of the Skeleton of the Human body.

The first volume of his System of Human Anatomy comprised only two of the eight parts of which the work was to consist. The part containing the skeleton was ready in manuscript when he died, and he is understood to have left valuable manuscripts in anatomy and physiology. His work on the Brain arose out of a controversy with Dr Spurzheim, who had, in 1815, given some lectures in Edinburgh on Gall's system of Phrenology, to which Gordon replied. The controversy was not so much as to the truth or fallacy of Gall's system, as whether Gall and Spurzheim's account of the anatomy of the brain was, as they claimed, original, or, so far as correct, borrowed without acknowledgment especially from the Dutch anatomist Reil. Gordon's familiarity with the works of the continental anatomists made his victory an easy one. The discussion excited much interest in Edinburgh, and his work on the brain made his reputation as an anatomist in London and in Paris.

At first Gordon gave his whole time to anatomy. He looked to science and teaching both for reputation and livelihood, trusting that if he required to practise he could turn his reputation to account in that direction. After six years, feeling that his duty to

his family required him to take practice, he applied for and received the appointment of assistant-surgeon to the Royal Infirmary, and before his death, four years thereafter, he had already, young as he was, obtained a considerable share of good practice. He died on 14th June 1818, after fourteen days' illness, with various obscure symptoms, which I have heard were attributed by some to fever, but which appear to have arisen from some affection of the brain. The unusual expressions of regret which his death called forth, in London as well as in Edinburgh, bring out forcibly the respect in which he was held both as a teacher and as a man, and the hopes which were entertained of his still higher distinction. With high intellectual ability, learning, and general accomplishment, his unassuming manner and entire simplicity of character, gained him universal esteem.[1] It is impossible to think of Gordon's brief career without ranking him high both as an anatomist and as a man, and without feeling that, in his early death, the Edinburgh school lost one who would have taken his place among its foremost men.

Innes.

Although Innes and Fyfe did not conduct schools of their own, they were well-known as demonstrators for many years in Monro's class, and by their anatomical publications.

John Innes was born at Callart, in the Scottish Highlands, some miles from Fort-William.[2] By his ability and application he made up for deficient opportunities of early education, and soon showed so much proficiency in anatomical knowledge, and address in minute dissection, that he was selected by Monro to be his assistant before he had attained his eighteenth year. He was demonstrator in Monro's class for nearly twenty years. As he died in January 1777, he must have commenced as demonstrator just when the second Monro commenced to discharge his professorial duties. After filling the office for about ten years, he began, at the solicita-

[1] The well-known engraving of Gordon hardly does him justice. The late Sheriff Gordon of Edinburgh was his son, and we can see the resemblance, but the father had a slender figure, with fair complexion and light hair.

[2] There is a notice of Innes, at the time of his death, in the Medical Commentaries,—vol. iv. p. 232.

tion of the students, to give an evening course of lectures, or demonstrations, in which he displayed much facility and clearness in description. These evening lectures were well attended, the last course which he gave by nearly 200 students.

In 1776, Innes published a little treatise on the muscles, of which a second edition was published by Monro in 1778.[1] Towards the close of 1776 he published eight engravings of the bones and muscles, after Albinus, to which he added explanations. His zeal in the discharge of his anatomical duties appears to have hastened the affection of the lungs with which he had been threatened for some time and which at length cut him off, at about the age of 38. Mr Innes appears to have been a good anatomist and teacher, and much liked and respected as a man.

Fyfe.

Andrew Fyfe was selected by Monro to succeed Innes as his "dissector" (the term then used) in 1777. The intimation of this appointment occurs in the Medical Commentaries, vol. iv. p. 242. It is added that "About two years ago, the annual prize-medal, given by the commissioners for improvements in Scotland, for the best drawing in the academy which they have established at Edinburgh, was adjudged to him." He continued as assistant to the second and third Monros, superintending the dissections and giving demonstrations, for a period of about forty years. He was a most painstaking teacher, but his flurried manner and hesitating delivery in the lecture-room, the result of incurable diffidence, interfered much with his efficiency there. Sir Astley Cooper, who had attended in 1787-8, thus refers to him:[2]—"Fyfe I attended, and learned much from him. He was a horrid lecturer, but an industrious worthy man, and good practical anatomist. His lecture was, 'I say—eh, eh, eh, gentlemen; eh, eh, eh, gentlemen—I say,' etc.; whilst the tallow from a naked candle he held in his hand ran over the back of it and over his clothes;—but his drawings and depictions were well made and very useful." Mr Bransby Cooper, who attended in 1815-16, says,[3] "Mr Fyfe was a tall thin man,

[1] In the Medical Commentaries, vol. ii. p. 437, 1774, there is an account by Innes of a case of "Præternatural Conformation of the Organs of Generation."

[2] Life of Sir Astley Cooper. By Bransby B. Cooper. Vol. i. 172.

[3] Ibid., p. 166.

and one of the most ungainly lecturers I ever knew. He had been assistant to Dr Monro, and by hard study, and dissecting for the doctor's lectures, became an excellent anatomist. Sir Astley used to mimic very admirably the awkward style of delivery and primitive habits which distinguished Mr Fyfe in the lecture-room, even when he was in Edinburgh, and invariably excited much laughter."

Fyfe was a great writer of text-books. It is no simple matter to follow their various editions and transformations through the catalogues of the medical libraries. The following is a list of his publications, as accurate as I am able to give :—

1800–1826. "Compendium of Anatomy." Passed through nine editions, and grew from 2 vols. 12mo, to 4 vols. 8vo. The ninth edition bears the printer's date 1826, after Fyfe's death. The 4th vol. of the "Compendium" is devoted to Comparative Anatomy. The Human Anatomy is arranged nearly after the manner of the course of lectures delivered by the late Dr Monro.

1800–1820. "System of Anatomy." 3 vols. 4to. Passed through four editions. The first edition of this work also, was called "Compendium." This work is chiefly composed of the plates and the explanatory references. The first edition contains 160 tables (4to plates) and nearly 700 figures. The fourth edition contains "upwards of 200 tables, taken partly from the most celebrated authors and partly from nature." Many of the plates are coloured.

1813–1823. "Outlines of Comparative Anatomy," 8vo ; afterwards, in 1823, "A Compendium of Comparative Anatomy."

1818. On Crural Hernia."

1830. "Plates to illustrate the Anatomy of the Human Body." 158 plates 4to ; and, also in 1830, an accompanying 8vo vol., "Description of Anatomical Plates." These are posthumous re-issues of the plates and explanations of his "System of Anatomy."

The large number of students in Monro's class in Fyfe's time, would create a considerable local demand for the text-books, and thus, and by his presence among the students as their practical teacher, Fyfe's name was, in his day, a well known one in the Edinburgh school. He certainly worked hard and long as a practical teacher, and the drawing and engraving for his anatomical plates must have been a laborious undertaking, and, apart from much originality, one of considerable merit. He died in March 1824, aged sixty-five.[1] His son, Andrew, became known as lecturer on chemistry in Edinburgh, and afterwards as professor of chemistry in the University of Aberdeen.

[1] I am in some uncertainty as to Fyfe's teaching during his latter years. Some years before his death, which took place in 1824, he is said to have left

Alexander Walker.

Alexander Walker is better known as an author than as a lecturer. He published the following works :—

1834. "Physiognomy founded on Physiology, and applied to various Countries, Professions and Individuals. Illustrated by Engravings."

1834. "The Nervous System, Anatomical and Physiological. In which the Functions of the various parts of the Brain are for the first time assigned; and to which is prefixed some account of the author's earliest discoveries, of which the more recent doctrine of Bell, Majendie, etc., is shown to be at once a plagiarism, an inversion, and a blunder, associated with useless experiments, which they have neither understood nor explained."

1836. Beauty illustrated by an Analysis and Classification of Beauty in Woman, with a critical view of the hypotheses of Hume, Hogarth, Burke, Knight, Alison, etc. Illustrated by drawings from life by Henry Howard."

Monro, and to have taught a class of his own, his lecture-room being somewhere in the Horse Wynd. Others who knew these times well, tell me that they were not aware of Fyfe having taught anatomy out of the University. My colleague Professor Macrobin informs me that he knew the Fyfe family well before as well as after he began to study medicine, that he is quite certain that Fyfe taught anatomy for some time in the Horse Wynd, and that, some time before his death, he had given up teaching, but still worked at his text-books and engravings. His name appears as entering to the Fellowship of the College of Surgeons 23d October 1818, a few weeks before the entry of his son Andrew Fyfe, M.D. This was just after Gordon's death, and may have been with a view to his instructions being recognised by the College. On the other hand, his books continue to the last to be dated from the "College" (University). The ninth edition of the "Compendium," bearing the printer's date 1826, is dated, "College, October 1, 1823." The 7th edition, 1819, bears on the title page "Teacher of Anatomy," "and many years Assistant in the anatomical theatre, University of Edinburgh;" while the 4th edition, 1820, of his "System" bears "Teacher of Anatomy," "Many years Assistant to the Professor of Anatomy, and still Conservator to the Museum of the University, Edinburgh." This agrees with the statement that he for some time taught a class of his own, and explains how his books are at the same time dated from the University. As to Fyfe teaching anatomy in the Horse Wynd, my friend Professor Macdonald informs me that he recollects distinctly both of the fact and the failure. Not succeeding, he had probably given up teaching, and confined himself to working at his text-books and engravings. The above quotation from Mr B. Cooper would seem to imply that Fyfe had left Monro by 1815-16. Curiously enough, although Fyfe died in 1824, the presentation copies of his posthumous books, bearing the printer's date 1830, in both the College of Surgeons and Medical Society's Libraries, are, as my friend Dr Sanders informs me, inscribed "from the author."

1838. "Intermarriage; or the Mode in which and the Causes why Beauty, Health, and Intellect result from certain Unions. Illustrated with Drawings."

1839. "Documents and Dates of Modern Discoveries in the Nervous System."

1840. "Woman Physiologically considered as to Mind, Morals, Marriage," etc.

1841. "Pathology founded on the Natural System of Anatomy and Physiology."

Mr Walker was born 20th December 1779. He had worked at anatomy with Dr Barclay, and at the age of twenty went to London, where he continued his anatomical pursuits. Returning to Edinburgh about 1808, he gave lectures in the Lyceum and elsewhere, which were numerously attended by students and medical practitioners. He also gave lectures in the Assembly Rooms, to mixed audiences, "On general and particular science." I am uncertain how far his lectures in Edinburgh were regular courses or special and fragmentary. He attracted considerable notice by instructing the students as to the mode of cutting down on arteries, for which he gave exact mathematical directions. In London he had had to leave the school in consequence of showing the students, after lecture, that Abernethy, instead of tying the subclavian artery, had put the ligature round the neighbouring nerve-trunk. What position he had occupied at St Bartholomew's, or in Abernethy's class, I am unaware, but the incident of the nerve being tied instead of the artery (on the dead subject), and Mr Walker's giving offence and having to leave there, in consequence of pointing it out, I have on good authority. After a few years he returned to London, where his career was mostly literary. He was connected with several newspapers, was an active founder of the "Literary Gazette," and published the contributions to science and art above enumerated. He had not, so far as I am aware, graduated, or desired to graduate, in medicine or surgery, although he worked at anatomy. He returned to Edinburgh in 1842, in weak health, and died Dec. 6, 1852, in his seventy-third year.

There is considerable merit and originality in some of Mr Walker's views, especially in regard to the cerebellum. I saw him often in his later years, when he resided in the neighbourhood of Leith, and was under the friendly professional care of my brother Dr James Struthers. Although his faculties had become considerably impaired, he was able to converse regarding his views on the nervous system, and still maintained to me that Bell was wrong, that the

posterior root is the motor, and the anterior the sensory root. Tracing the connexion between the cerebellum and the posterior column of the spinal cord, he inferred, from the views he held regarding the cerebellum, that the posterior root of the spinal nerve must be motor, leaving the sensory function to the anterior root. His claims to priority in the idea of the two roots having distinct functions are fully discussed in his work on the Nervous System.

Craigie.

It is perhaps not generally known that the late Dr David Craigie taught anatomy for several years.[1] Born of parents in humble life, in North Leith, Craigie maintained and educated himself by his own exertions in private teaching, and took his degree at the University of Edinburgh in 1816. He began to teach anatomy in 1818, on the death of Dr Gordon; not in Gordon's class-room, however, but in No. 3 on the opposite side of Surgeons' Square, which had been before occupied for anatomical purposes by a Mr Smith, an obscure and unsteady person, who had endeavoured to teach anatomy. Dr Craigie continued to give regular courses of anatomy for at least four years. His lectures were not numerously attended, and he became occupied in work as a physician, and in connexion with the Edinburgh Medical and Surgical Journal, of which he afterwards became, and long continued, sole editor. In 1832 he was appointed Inspector of Anatomy for Scotland under the Anatomy Act, and held the office for several years. Dr Craigie's reputation is well known as a successful teacher and author in pathological anatomy and in practice of medicine. He is the author also of the article "Anatomy" in the seventh and eighth editions of the Encyclopædia Britannica. He died on 17th May 1866, in his seventy-third year, having been born 6th June 1793. In this Journal for August 1866 will be found a good notice of the life of this most learned and estimable physician, except the facts in regard to his teaching anatomy. These I obtained from himself in a conversation which I had with him a few weeks before his death.

[1] I understand that Dr Abercrombie at one time thought of teaching anatomy. He gave a lecture for Dr Barclay once, but never tried it again.

Cullen.

As Dr Barclay's career was drawing to a close, William Cullen (grand-nephew of the great William Cullen) began to lecture on anatomy. He entered as a Fellow of this College on 1st August 1822.[1] He began in John Bell's old lecture-room in Surgeons' Square, and removed to the medical school in the "Society," Brown Square, where he taught during his last three years. He had a class of about a hundred students or upwards, to whom he lectured once a-day—a good class, considering that he was one of four lecturers, Aitkin, John Lizars, and Knox, besides Monro, being now in the field. Cullen was a highly educated man, and an eloquent lecturer. He is said to have prepared his lectures carefully. All agree in speaking of him as an excellent and successful lecturer. His probationary essay in 1822 was on Bronchotomy,

[1] I have been unable to ascertain the exact year in which Cullen commenced to teach anatomy, but it was probably in 1823-4. During the autumn of 1822 he was in Paris with the view of adding to the museum of the College. "Cullen's proposal to go to Paris is minuted 23d, and dated 22d June 1822, from 22 Howe Street. There had been a prior proposal, for which the College voted a large sum, to buy the museum of Professor Meckel of Hallé. This, which failed, appears to have suggested to Cullen what he proposes in his letter, 'to make or purchase specimens where they are most likely to occur.' He seems to contemplate preparations illustrative of disease, of accident, and of parturition, fœtal development, and the diseases incident to that department, distortions, etc.; and he thinks that £500 a-year would, in three or four years, accomplish his object on the most liberal scale, as by an arrangement with the two Governments, all needless custom-house charges could be remitted. He asks £300 in full of all demands, except transit to and from Paris. The motion approving the plan was carried on 25th June. On 23d October he wrote from Paris explaining his partial failure from unexpected impediments which might make it ultimately necessary to solicit his recall. On 29th January (1823) he again wrote to the President, from Howe Street, giving an account of his partial success, and a vote of fifty guineas (with thanks), in addition to previous advances, follows on 11th March. In the annual accounts for 1823 occurs—'Expenses of Mr Cullen's mission to Paris, and sum voted by College to him, £197, 13s. 11d.'" (MS. from Dr Gairdner.) The preceding shows how fully the College appreciated the importance of having a good museum, and that Cullen was enthusiastic in science. His name appears in the College Records 11th November 1824, in the discussion on the propriety of enforcing a course of practical anatomy. I have been informed that he might have succeeded to Dr Barclay's school, but did not offer sufficient terms. Dr Knox, with greater penetration, told the friends who negotiated the matter for him, not to hesitate about terms.

a subject on which he afterwards wrote two papers.[1] He was one of the surgeons to the Royal Infirmary, but it was physic, not surgery, to which he looked forward. He gave some special lectures on the stethoscope, then new in Edinburgh, which were attended by teachers as well as by students. His last session was 1827-8, so that he had taught anatomy only for about five years. He died suddenly in July 1828. He was liable to epileptic attacks, and was found dead sitting in his study chair.[2]

Knox.

The period between the end of Dr Barclay's time and the retirement of the third Monro in 1846—twenty years—was one of much interest in the Edinburgh Anatomical School. Lecturers on anatomy multiplied and succeeded in attracting classes with comparative ease. It was a period not only of the anatomical, but of the whole medical school, which cannot be understood apart from the consideration of the state of anatomical teaching under the third Monro. The numerous students of the University had to resort to the lecturers for anatomical instruction, and this greatly supported the lecturers on other departments of the curriculum. The University matriculation list had, at the end of the first ten years, diminished to below 700, and during the next ten years went down until, in Monro's last year, the number was only 330, after which it began to recover. This diminution was, as already indicated,

[1] "Case of Cynanche Laryngea, in which the operation of Bronchotomy was successfully performed."—(Edin. Med. and Surg. Journal, vol. xxviii., 1827, p. 79); and "On the Causes of the Fatal Termination of certain Cases of Bronchotomy."—(*Ibid.*, vol. xxix., January 1828, p. 75.) He had written an essay on Bronchotomy while a member of the Students' Medical Society at St Bartholomew's Hospital in 1820. A paper by Cullen and Robert Carswell, on Melanosis, was read at the Edin. Med.-Chir. Soc., 7th May 1823, and was published in the Society's Transactions, 1824, vol. i. p. 264.

[2] For most of my information regarding Cullen I am indebted to my colleague Dr Macrobin, who dissected with Cullen during his last year in Surgeons' Square, and then attended his lectures and became his class-prosector in Brown Square. Cullen's attention being a good deal taken up with other matters he was sometimes not forthcoming at the lecture hour, the prosector receiving a note of apology just before the hour. This happened so often that the prosector's entry before the class to make the apology was understood, and received with a round of the usual Edinburgh "ruffing," and with "Come away, come away; what is the excuse to be to-day?"

partly the inevitable result of the institution of other schools, but was largely owing to the cause above mentioned. Of this I could give abundant illustration, were it necessary or agreeable. Some of the anatomical teachers of this period, like Barclay, devoted themselves to anatomy, some, like John Bell, taught it with, or with a view to, surgery; and the Edinburgh school of that period, besides producing its own anatomists and surgeons of the present day, furnished professors of anatomy to all the Universities of Scotland, and anatomists or surgeons to some of the London schools.

The chief among the lecturers of this period, I need hardly say, was Dr Robert Knox, the direct successor of Barclay, who taught anatomy in Edinburgh for sixteen years,[1] the attractiveness of whose lectures was so great that his class attained a number unprecedented even in Edinburgh. Before he had lectured four or five years, his class was larger than that of the second Monro had ever been. Dr Knox introduced a new aspect of anatomy. The characteristics of the Edinburgh Anatomical School had varied in the different periods with the science of the time or with the characters of the men, who, though successors or rivals, were far from being copies of each other. The first Monro was not so much either kind of anatomist, as all kinds in a primitive time. The second Monro was a descriptive anatomist in a more minute age, and his comparative anatomy was either special or, like Hunter's, physiological. John Bell originated the school of surgical anatomy. Charles Bell was the teleological, and especially the artistic anatomist. Barclay set the example of making the teaching of anatomy an occupation; his anatomy was descriptive and classic, and his comparative anatomy, though chiefly descriptive, was scientific enough to enable him to see and teach the outlines of homology. Gordon, again, was the physiological and minute anatomist, not only of the organs but of the tissues, as far as the instruments of the day could carry him. Fyfe was the plodding practical demonstrator and text-book maker, the provider of daily common anatomical food. Knox, lastly, was the morphological anatomist. Building on the comparative anatomy of his predecessor, and familiar with the work of the then brilliant French school, with the descriptions and induc-

[1] Dr Knox also formed a considerable Museum, which is now in my possession.

tions of Cuvier, and the then despised philosophy of Geoffroy St Hilaire, Dr Knox was able to invest human anatomy with a new interest. His forte as an anatomist was, not in detail or the relation to surgery and medicine, but in bringing comparative anatomy to the explanation of human anatomy. I have heard men who have since risen to eminence say with enthusiasm, that in Knox's lectures they were not only taught but stimulated. In the lecture-room the ridicule which he cast on the opinions, and too often on the men, of the time, did not on the whole help him. It was to his having early mastered and appreciated the great facts and ideas of morphology, together with—as we may see by his writings—his wonderful command of the most powerful and felicitous language, that Dr Knox's lectures owed their value and their attractiveness.

As the farther notice of this period would lead me to speak of living men, and of events which are fresh in the memory of many, the time has not nearly come for making it the subject of a historical sketch. When the history of this period is written it will have to include a notice of an event important to this country as well as to the Edinburgh medical school, the passing of the Anatomy Act in 1830, and of the events which led the legislature to see that it was for the public interest to legalize dissection. At some future time I hope to be able to resume this sketch so as to include this period.

Separation of Physiology and Surgery from the Courses of Anatomy.

I have thought that the following notice of the separation of physiology and surgery from the anatomical courses in the Edinburgh school, might prove interesting, both on account of the facts, and as showing more fully the nature of the work which fell to the anatomical teacher in the times of which I have spoken. I have obtained the facts from the former regulations of this College, and of the University, from the records of this College, and from some other sources, which will be referred to.

The inquirer here is liable to fall into error in going back on the old regulations, if he looks only at the list of classes in the curriculum, and does not consider the rules applying to the teachers. We

see physiology and surgery in the curriculum half a century ago,[1] but the fact is, that these lectures were not only given, or allowed to be given, by the same teacher, but were not even separate courses. It was not till this College refused to recognise any teacher for more than one branch of the curriculum, that the courses were necessarily separate in Edinburgh. They might or might not, and generally they were not; for all the systematic teachers of whom I have spoken taught, or were understood to teach, at least surgery as well as anatomy.

The first check was applied in 1829, when this College passed a rule refusing to recognise a teacher for *more than two* departments.

18th June 1829.—On the recommendation of a committee, the College enacted "That no Professor or Lecturer shall be recognised who shall teach more than two of the branches of education recognised by this College." To take effect immediately. A motion that Anatomy and Practical Anatomy, and Chemistry and Practical Chemistry, be considered respectively one branch, was lost. But on 11th July this exception, as applied to Anatomy, was carried by a large majority; and on 15th July the same advantage was extended to the teacher of Chemistry and Practical Chemistry.

It was, however, still allowable to teach either physiology or surgery, or any other branch along with anatomy, till 1838, when the College refused to recognise any teacher for more than one branch.[2]

It was different in the Universities, where the professor is neces-

[1] The candidate for the Diploma "must have attended lectures on Anatomy, Chemistry, Institutions of Medicine, Practice of Medicine, Principles and Practice of Surgery, Clinical Surgery, Midwifery, Materia Medica." Regulations R.C.S. Ed. 1809. Edin. Med. and Surg. Journal, vol. v.

[2] This was to take effect after 1st May 1839. The lectures of no Professor or Lecturer to be recognised who lectures on more than *one* of the branches of the curriculum "during the same session." Nor would any teacher of a branch of the curriculum be recognised if he lectured also on a branch not included in the curriculum, medical or general, unless he had obtained special leave from the College. As exceptions to the new law, the following might be taught by the same teacher,—Anatomy and Practical Anatomy; Chemistry and Practical Chemistry; Practice of Medicine and Clinical Medicine; Practice of Surgery and Clinical Surgery; Mathematics and Natural Philosophy; and "for the present" Clinical Medicine and Clinical Surgery were allowed to be taught by any physician or surgeon attached to a recognised hospital although he might also be a teacher of some other branch of the curriculum. None of these exceptions have since been rescinded, and the College has ceased to look upon the last as temporary or undesirable.

sarily restricted to the department for which he is appointed; and within which we can, therefore, at once discover the time of the separation by referring to the date of the institution of the respective chairs. Keeping these considerations in view as enabling us to determine when the separation became compulsory, we have now also to see how the separation had more or less taken place voluntarily on the part of the teachers.

Separation of Physiology.—In a sense, the separation of physiology took place first. In Scotland, the course of "Institutes of Medicine" has always been understood to embrace physiology, although the undefinable character of the title has rendered the course a variable one, according to the attainments and predilections of the teacher. Now, this chair and class have existed in the University since 1726, six years after Monro was appointed professor of anatomy; so that in the University, and so far, physiology has, since the formal commencement of its medical school in 1726, been taught separately from anatomy. So far as I am aware, John Allen was the first, out of the University, to give a separate course of physiology, beginning in 1794, and continuing to do so for five years, when (in 1799-1800) he left for London, afterwards joining Lord Holland.[1]

After an interval of about ten years, Gordon, as we have seen, began to give courses of physiology separate from his courses of

[1] Allen "was the very first of our private lecturers; physiology being his favourite department. I have heard Dr John Gordon, a judge on such a matter of the highest authority, say that Allen's single lecture on the circulation of the blood contained as much truth and view as could be extracted by an intelligent reader from all the books in Europe on that subject." (Lord Cockburn's Memorials of his Time, p. 177.) For notices of this most able man, see also, Lord Brougham's "Statesmen of the Time of George III.," Knight's ed., vi., 175; the biographical sketch, by Major-General Fox and Sir J. Gibson Craig, prefixed to the 1849 edition of Allen's "Inquiry into the Rise and Growth of the Royal Prerogative in England;" in the biographical notice of Dr John Thomson in Life of Cullen, vol. ii.; and in Dr Murray's Annals of Colinton, the parish in which Allen was born in 1771. "He was a stout, strong man, with a very large head, a broad face, enormous round silver spectacles before a pair of peculiarly bright and intelligent eyes, and with the thickest legs I ever remember. His accent Scotch; his manner eager but extremely good-natured." He was "the most liberal of men towards others of all opinions, provided he deemed them honest in their profession of them. Violent often in language, and uttering the most terrific expressions towards those he believed to be either hypocrites, or cruel, or bigoted, he was in acts and deeds most gentle and kind-hearted." (Fox, pp. 19-23.)

anatomy.[1] Afterwards there were other lecturers on physiology, but it was not until made compulsory by this College in 1838, that it was necessarily a formal course in the school, separate from anatomy, or that the anatomical course became more distinctly anatomical. It was not, I may add, till 1852 that the London College of Surgeons required its candidates, following their studies in Scotland, to attend a course of physiology distinct from and in addition to two courses of anatomy, instead of the three courses of anatomy, (or so-called "anatomy and physiology," as the tickets of the anatomical teachers bore,) previously required. This change, however, was to us merely a nominal one, as we had long before ceased even to endeavour to give physiology proper in the anatomical course, the law of this College in 1838 having virtually completed the separation in the Edinburgh School.

Two circumstances tended to keep physiology chiefly in the hands of the anatomical teachers. One, that the course of "Institutes of Medicine" has generally been regarded from the physician's rather than from the anatomical point of view;[2] the other that (besides the natural alliance, so long as it was possible to overtake both in one course) teachers of anatomy have been more able by their position to devote themselves to science, and were consequently, with a few exceptions,

[1] According to his biographer (p. 108), Gordon "announced his intention of giving, during the summer of 1813, a separate course of lectures on physiology, which had now become his favourite study, and to which he devoted himself with great ardour;" and it is added that "of the eight courses which he subsequently delivered, generally in the winter season, and occasionally in summer, each surpassed that which preceded it in interest, and in the reputation which it brought to its author." This is no doubt correct so far, but Gordon must have given at least separate winter courses of physiology before this, as Dr Gairdner and Dr Henderson, who both (as already referred to) began with Gordon in 1808, and were done with him before 1813, inform me that they distinctly recollect his giving courses of physiology separate from anatomy. Dr Henderson thinks that he did so in both the third and fourth of the four years during which he attended Gordon's lectures. If he delivered eight courses after 1813, he must, in at least two years, have lectured on physiology both in the winter and summer sessions.

[2] The professors of the "Institutes of Medicine" in the University of Edinburgh during the time of which I have treated in this sketch were John Innes, Whytt, Cullen, Drummond, James Gregory, Andrew Duncan senior, Andrew Duncan junior, and Alison. Whytt, it need hardly be said, has left a permanent name in physiology. (See Memoir of the Life and Writings of Whytt, by William Seller, M.D.; Trans. Roy. Soc. Edin. 1862.)

the chief representatives of physiology also. It is not uncommon still to hear regret expressed at this separation, the alliance seems so natural. No doubt a certain kind and amount of physiology must always come in with anatomy. But physiology is now so great and important a science, with ramifications beyond the anatomical; and anatomy has recently been so greatly extended, especially in the directions of homology and histology; that the separation has become inevitable, each being more than enough to occupy the undivided attention of its teacher.

Separation of Surgery.—The history of the separation of surgery from the anatomical course is different. The chair of Surgery in the University was not established till 1831, more than a century after the chair of the Institutes of Medicine was founded. This was chiefly owing to the persistent and successful opposition of the second Monro, who claimed to be professor of surgery as well as anatomy, and thus prevented surgery from being taught in the University as it deserved, while it was being taught at this College as a separate course. It has been commonly believed that the first separate course of surgery in Edinburgh was by Dr John Thomson, who began to lecture on surgery in 1801.[1] The records of this College, however, show that, so far back as 1772, Mr James Rae had begun to teach surgery, as a distinct course.

27*th August* 1772. A committee appointed relative to a proposal of Mr James Rae to give a course of lectures, reported favourably, and authorized Mr Rae's lectures to be advertised, as follows:—"The College of Surgeons being desirous to promote any useful undertaking towards the advancement of the knowledge of surgery, have taken into their consideration a plan of lectures on the whole art of surgery, also practical discourses on the cases of importance as they occur in the Royal Infirmary, given for several years past at their Hall, by Mr

[1] In a letter written in September 1803, Dr Thomson mentions his "having been employed for three years in teaching surgery, and his having given during that time, two courses of clinical lectures in the Royal Infirmary, and two courses of lectures on the principles and practice of surgery, in a private theatre." (Loc. cit., p. 19.) His biographer goes on to say, "At the time when Dr Thomson began to lecture on surgery, no separate or distinct course on that subject was delivered in Edinburgh, either in the University or by any private teacher. Surgery was taught only as an appendage to anatomy; and the result was, that a few lectures, hurriedly introduced at the close of the anatomical course, long formed the only instructions in surgery given in the city." (P. 39.)

James Rae, surgeon in Edinburgh, and one of the members of the Society. As the course is founded on the practice of the hospital, and delivered by a person who has been in the habit of constant observation, they recommend it as useful and necessary to the students of physic and surgery, and to render this course more extensively useful, the Society are resolved to communicate to him such cases of importance as may occur in their practice."

Four years after this came the proposal to institute a chair of surgery in the University.

23*d October* 1776. Of this date occurs a letter from Mr Rae suggesting to the surgeons to "frame an application" to the Crown to establish "a professorship of surgery in the University of Edinburgh as necessary and useful towards perfecting the students of medicine and surgery in this branch of their education." From the tenor of this application it appears that Mr Rae's clinical surgical instruction had been favourably received by the managers of the hospital, and warmly supported by the surgeons. It also appears that Dr Monro had heard of the proposal for a professorship, and got his brethren of the University in a faculty meeting, to give their opinion "of the inutility of such a profession, as he teaches all that students could learn from it." Mr Rae requests the support of the surgeons on the ground that the proposal does not interfere with Dr Monro, "and will be of advantage to the students in matters which he does not teach or profess."

A committee appointed to consider the proposal, reported, on 30th October, that "it must be obvious to every unprejudiced person that two such extensive and important branches as anatomy and surgery must be more completely taught by two persons properly qualified for each branch than that both should be taught by one," etc. Report signed by Alexander Hamilton (the President), John Balfour, Robert Walker, Thomas Hay, and William Chalmers.

1*st May* 1777. A petition to the Crown framed by the above-mentioned committee was agreed to. It concludes with—"May it therefore please your Majesty to create a Professor of Surgery in this University, and to grant that your Royal nomination shall be in favour of one of the members of the College of Surgeons of Edinburgh; and if your Majesty shall be graciously pleased to grant our request, permit us humbly to recommend Mr James Rae to fill that chair."

21*st May* 1777. There was laid before the Surgeons an answer from the Lord Advocate to the effect "that it is not in his power to interfere in behalf of this application, as he had many months since received a letter from the Principal and medical Professors of the University requesting that, if an application should be made for the creation of a professorship of surgery in Edinburgh, he would represent to his Majesty's ministers that, in the opinion of the University, and particularly of the medical part, the creation of such a professorship was useless, and would be very improper."[1]

[1] I am indebted to Dr Gairdner for the above abstracts and extracts from the Surgeons' Records.

It was this which led Monro, on 16th July 1777, to apply to the Town Council for a new commission expressing that he is professor of surgery as well as of anatomy.[1]

This long and successful opposition by Monro to the establishment of a chair of surgery explains two important events in the Edinburgh school — one, the institution, in 1803, of a chair of Clinical Surgery; the other, in 1804, the institution of a chair of Surgery by the College of Surgeons, and the appointment thereto of Dr John Thomson, a step which Monro exerted himself in vain to prevent. This chair the College suppressed, when its object was accomplished by the institution of the chair of surgery in the University in 1831. The chair of Military Surgery in the University was instituted in 1806, and Dr Thomson at the same time appointed to it. He continued, however, to deliver his lectures on surgery up to 1821. His course was numerously attended. One writer mentions that in 1815-16 as many as 250 to 280 attended the course.[2] Surgery was meanwhile very variously taught; by some little more than nominally along with anatomy, in some cases by the anatomical teacher but in a separate course, and by some who taught surgery only.[3]

[1] In his petition (Dalzel, ii. 450) he refers to his father having, "in imitation of the practice of Leyden, then taught, and from that time continued to teach yearly anatomy and surgery in one connected course of demonstrations and lectures, and was universally considered as Professor of both branches"—that he "continued to adopt the general plan pursued by his father, comprehending surgery with anatomy; that the teaching of surgery has been understood to belong to his office, yet the commission granted to him and his father as joint-professors of anatomy, makes no mention of surgery, probably resulting from the supposition that it was comprehended under that of anatomy. Craves a new commission expressly bearing him to be Professor of Medicine, and Anatomy and Surgery. Granted."

[2] Loc. cit., p. 42.

[3] Barclay and Gordon both styled themselves "Lecturer on Anatomy and Surgery," and to some extent taught surgery in the anatomical course. In the earlier years of the register of this College, beginning 1826-27, Monro's pupils register two distinct tickets, one for "Anatomy, Physiology, Pathology, and Surgery," the other for "Principles and Practice of Surgery;" and in the announcements of the University classes about this time Monro appears as teaching "Anatomy and Pathology" at 1 P.M., and "Principles and Practice of Surgery" at 4 P.M. I understand that Monro's lectures on surgery, at 4 o'clock, were delivered irregularly, and did not form a complete or satisfactory course. Cullen's tickets are registered as "Anatomy and Physiology," and "Practical Anatomy;" Knox's, "Anatomy, Physiology, and Pathology," "Practical Ana-

The University meanwhile was without a chair of surgery. But in 1831, Monro having been dead for fourteen years, the matter appeared in a different light, and there was no one now to call in question either the utility or propriety of establishing a chair of surgery. The courses of anatomy and surgery were now necessarily separate in the University; but it was not till 1839-40 that they became necessarily so in Edinburgh, as it was not till 1838 that this College passed its regulation refusing, after 1st May 1839, to recognise any teacher for more than one branch.

Attendance on Anatomy.—The amount of attendance on anatomy was, from time to time, increased as these changes took place. Previous to 1824 attendance on a course of lectures alone was required. It is interesting now to look back on the position of matters when it was first proposed to make practical anatomy imperative. The proposal was first made at a meeting of the College, on 2d October 1824; and the reasons assigned were, that a course of dissections was required both by the London College of Surgeons and the Navy Board as a necessary part of a complete surgical education. When the motion came up for discussion, on 11th November, William Cullen, the anatomist, moved as an amendment, "That a committee of three members be appointed to collect information as to the probability of a sufficient number of subjects for dissection being obtained, so as to enable the College to judge of the prudence of making this enactment." The amendment was lost, and the original motion carried, "That a course of dissection or practical anatomy, of not less than three months' duration, shall be added to the course of study now required of candidates for the diploma. This law to take effect as to candidates at or subsequent to March 1826." This was a bold step to take in Edinburgh, with probably over 900

tomy and Operative Surgery," and "Comparative Anatomy;" John Lizars', "Anatomy and Physiology," "Practical Anatomy," and "Pathology and Surgery." The latter was, I believe, a separate course of lectures. John Aitkin, "Anatomy, Surgery, and Physiology," and "Practical Anatomy." Liston, "Principles and Practice and Operations of Surgery;" Allan, the same, these being courses of surgery only. Too much reliance is not to be placed on the titles used by the various lecturers at this time. It was only after this, in 1829, that a lecturer was restricted to even two subjects. The above courses were essentially either courses of anatomy on the one hand, or surgery on the other.

students in the school.[1] It was a duty to medical education; but Cullen, as an anatomical teacher, saw the hazard to the school. The University passed a similar regulation in the following year.[2] It was no doubt these enactments, by the pressure they occasioned in an overcrowded school, which led on to the events which brought about the Anatomy Act of 1830.[3]

[1] 850 was the number in 1824–25 on the University matriculation list. In 1825–26, it was 932.

[2] Practical Anatomy was, however, not absolutely imperative in the University till 1833, being between 1825 and 1833 among the five subjects *two* of which, at the option of the student, were required to be attended. The five were—Clinical Surgery, Medical Jurisprudence, Natural History, Military Surgery, Practical Anatomy.

[3] The impossibility of obtaining a sufficient supply for dissection in a school so overcrowded, accounts for the numerous engravings which were issued by the Edinburgh anatomists. Innes appears to have been the first to publish anatomical engravings in Edinburgh. The beautiful engravings accompanying the folio edition of Monro's work on the Bones were not published in Edinburgh, but in Paris, in 1759, by M. Sue, professor of anatomy in Paris, and also professor of anatomy to the Royal Academy of Painting and Sculpture. Innes' example, in 1776, was followed both by anatomists and engravers. As Innes' plates were but reduced copies from Albinus, and the execution not very artistic, Mr Andrew Bell, a professional engraver, appears to have come into the field to supply the latter defect. In the Medical Commentaries, from vol. iv. (1777) to vol. xv., and in the Annals of Medicine, vol. iii. (1798), occur numerous notices of the gradual appearance of these engravings by Andrew Bell, under the various designations of Bell's edition of the Plates of Albinus, Anatomical Engravings, and Anatomia Britannica. In 1786 appeared John Aitken's Engravings, which, he informs us, are "either copied from nature, or selected from the works of the first anatomists." In 1794 came John Bell's Engravings of the Bones, Muscles, and Joints, drawn and engraved by himself; followed, in 1801 and 1802, by Charles Bell's Engravings of the Arteries, Nerves, and Brain, the drawings by himself, the engraving by various artists. Fyfe's engravings were announced in 1798 (Annals of Medicine, vol. iii. 469) as about to appear. They appeared in 1800, first in his "System of Anatomy," in three quarto volumes, containing 160 plates and about 700 figures. They are mostly reduced copies from the engravings of the continental anatomists, but some are from his own dissections; the engraving was mostly executed by himself. Fyfe's engravings increased in subsequent editions, and were published, up to 1830, in various forms. In 1818 appeared Dr Gordon's "Engravings of the Skeleton of the Human Body." From 1823 to 1826 appeared the "System of Anatomical Plates," 5 vols. folio, and "Explanation of the Plates," 5 vols. 8vo, by John Lizars. From 1819 to 1834 appeared Mitchell's Engravings, under the superintendence of Dr Barclay and Dr Knox. The first part was entitled, "A series of engravings representing the bones of the

It is interesting to notice the comparative attendance on the courses of lectures and of practical anatomy at this time. I am able to give this from the register of this College, the first few years of which (beginning 1826-7) I have had occasion to consult. In 1826-7, of 669 pupils on the winter register, there are, attending the anatomy course (*i. e.* lectures on anatomy), 470; practical anatomy, 262, and of the latter only 75 are not also at any course of lectures on anatomy. In 1827-8, of 722 pupils registered in winter, there are attending the anatomy course 558; practical anatomy 296, and of the latter only 73 are not also attending lectures on anatomy. In contrast with this, in the anatomy classes of recent times the number attending the practical class is the

human skeleton, with the skeletons of some of the lower animals. By Edward Mitchell, engraver. The Explanatory References by John Barclay, M.D.," etc., Edin. 1819. The second edition, in 1824, has the same title. It was Mitchell's own idea to publish engravings for the use of students, and he had begun to copy the plates of Domenico de Rossi, Rome, 1696, and of Albinus; but, on consulting Dr Barclay, he advised him to give up Rossi for those which Sue had published to illustrate the French edition of Monro on the Bones. They are accordingly copied from Sue and Albinus, with the addition of some original views of the skeleton of the lower animals. The third edition, in 1829, has Dr Knox's name added. Mitchell's series of engravings went on, and were commonly known as Knox's Plates. The Nerves appeared in 1829; the Arteries in 1831; the Muscles in 1832; the Ligaments in 1834. They are all beautifully executed copies, in quarto, of the engravings of Albinus, Haller, Camper, Scarpa, Sömmerring, Walther, Cloquet, and Tiedemann. The muscles are, as announced on the title page, "carefully copied from the folio plates of Jules Cloquet." The Arteries are reduced from those of Tiedemann, "engraved by E. Mitchell, under the superintendence of Thomas Wharton Jones, Surgeon. The Explanatory References, translated from the original Latin, with additional notes, by Dr Knox." In the preface to the latter, Dr Knox mentions that his object in introducing engravings was that they might be used in the dissecting room, "to be laid on the dissecting table as a guide to your dissections;" and he says that "the experiment was eminently successful; and it was easy to observe that, by the use of such delineations and descriptions in the practical rooms, the general character of the dissections shortly became altogether different." This we can readily understand, especially in these times of little superintendence and teaching in the dissecting room; and good plates of regional anatomy may still be of considerable use in this way; but the chief explanation of the issue of these numerous books of engravings by the former anatomists in Edinburgh, mostly copies of previous publications, was no doubt that the enormous number of students made the supply for dissection comparatively scanty, and drove them to the use of pictures instead.

greater, in the proportion of about three to two; the practical anatomy course being attended generally during three years, the anatomy course during two.[1]

In 1828 two courses of Anatomy appear in the curriculum of this College, the courses to be of "at least five months' duration," and "to consist of at least five lectures weekly." In 1829, six months Practical Anatomy, instead of three months, were required.[2]

[1] I may give the numbers registered as attending the respective teachers of anatomy during the above two years:—

1826-7.	Anatomy.	Practical Anatomy.	Of the latter, at Practical Anatomy only.
J. Aitkin .	36	26	3
Cullen . .	45	36	18
Knox . . .	207	90	17
J. Lizars . .	104	96	35
Monro . . .	78	14	2
	470	262	75
1827-8.			
Aitkin . .	47	17	0
Cullen . . .	37	30	11
Knox . . .	247	115	22
Lizars . . .	138	109	30
Monro . . .	88	25	10
	557	296	73

These numbers give probably a fair enough proportionate view of the attendance on the respective teachers, as well as a correct view of the relative numbers attending the Anatomy and Practical Anatomy classes; but they do not show nearly the total attendance on each teacher, as this register does not contain the names of nearly all the students. (See Note, p. 60.)

[2] This was a year of great changes. It was the year in which teachers were restricted to not more than two departments. The curriculum for the diploma of the College was extended in several departments. A second course of Surgery was added; a three months' course of Practical Chemistry, and a six months' course of Clinical Medicine, were introduced; the courses of Clinical Surgery and Practical Anatomy were extended from three to six months, and Hospital attendance from twelve to eighteen months. Medical Jurisprudence and Botany was not yet in the curriculum, but, together with Natural History, Comparative Anatomy, and Pathological Anatomy, were "strongly recommended." As expressed also in the 1828 regulations, "the six months' courses" are "understood to consist of five lectures per week for a period of not less than five months."

Some may be surprised to learn that certificates of attendance were now for the first time required. Previous to 1826–7 the presentation of the class tickets appears to have been all that was required. In 1826–7 the College opened a Register in which, during the first month, or two months, of the session, all students who intended to present themselves as candidates for the diploma of the College were required to enter their "name, from whence, classes, and teachers." This, however, was evidence only of entry, not of attendance on the courses. The first requirement as to evidence of attendance which I can find relates to dissection, in the 1828 regulations.

"Every candidate shall in addition to the certificate of entry to a course of Practical Anatomy from the register of the College, produce to the President a certificate from a Professor or Teacher of Anatomy recognised by the College, that he has been actually engaged in the dissection of the human body, under the personal superintendence of the said Professor or Teacher, during the course."

On 18th June 1829 the College enacted that "the candidate shall be required, in addition to the tickets or proof of entry to the different classes, to produce *certificates* of his having attended these classes, from the respective Professors or Lecturers." The difficulty now arose as to what evidence of attendance the teacher should require before certifying. There appears to have been, in some quarters, considerable laxity on this score, so that the College required again to interfere.

13*th October* 1831. "Dr Robertson moved that a letter should be sent to the different Lecturers, recommending to them the propriety of their regularly calling a roll," etc. The Motion, after discussion, was "modified so as simply to convey to the Lecturers the opinion of the College that it appeared to them expedient that the most efficient means in their power should be adopted to insure the regular attendance of students."

Towards the end of 1836, there are reports that certificates of attendance had been given to students who had not attended these classes. A committee was accordingly appointed to confer with the lecturers. This committee reported to the College, on 29th November 1836, unanimously in favour of a roll-call of students, 20 times in a six months, and 10 times in a three months' course, and that the certificates of lecturers should be according to a proposed formula. "I hereby certify, that Mr ——— attended my lectures on ——— commencing on ——— and terminating on ——— that the roll of the class was called ——— times during the session, and that Mr ——— was present on ——— of these occasions."

This rule and formula have been since acted on, the number of roll-calls

having been increased to 25 in a six months', and 12 in a three months' course. The student must re-attend the course if his certificate bears that he has been absent on more than 8 of these occasions in a six months' course, or on more than 4 in a three months' course. If on more than 6 in a six months' course, or more than 3 in a three months' course, the College secretary is required to intimate the irregularity to the Examiners.

Lastly, in 1838, when teachers of anatomy were restricted to their own department, twelve, instead of six, months' attendance on Practical Anatomy was required.

These changes mark both the progress and the diffusion of anatomy. Contrast the nature of the anatomical course in the time of the second Monro with that of the present day. Monro's course embraced not only anatomy, but nominally the whole of surgery, and a good deal of practice of medicine and physiology too, and he was at the same time not only in practice but the busiest consulting physician in Edinburgh. Now, even the anatomist who keeps to his subject finds it difficult to give in one session a complete, much less an exhaustive, view of his science. The lateral extension of anatomy by the diffusion of a practical knowledge of it among the members of the medical profession, has gone on no less rapidly. Less than a generation ago it was no uncommon thing to find medical practitioners who had never dissected, and few except those attached to the medical schools would venture to perform a difficult surgical operation. Irrespective of other causes of progress, this diffusion of anatomical knowledge alone must have greatly increased the utility of the medical profession. To the old system, besides better means of illustration in the lecture-room, there has been added the great department of practical instruction, absorbing much of the teacher's time. To have the science of anatomy, and its application, expounded by the anatomist in the lecture-room is of unquestionable importance; but this must be accompanied by careful instruction of individuals in the practical rooms. It is the combination of the two which constitutes a good school of anatomy.

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